RAILROAD GAZETTE

FRIDAY, JULY 15.

Contributions.

Why Does a Locomotive Engineer Need Intelligence? Should He Know Anything About a Locomotive?

TO THE EDITOR OF THE RAILROAD GAZETTE:

Among locomotive engineers one finds many grades of men, a greater variety perhaps than is to be found in any other employment where all men stand so nearly on a level as to wages and position. Some are so ignorant they can barely scrawl a name; others are well born, soundly educated, and fitted, after a little special training, to fill almost any position in life.

The question naturally arises, is there any difference in the work of these men; is a work using a lower grade of man as safely and as profitably operated as one where more intelligent and better-trained men are used? Have intelligence and character any value among the rank and file of railroad men, or is the whole question one of the efficiency of its officers?

To state fully a doubt involving a fundamental principle like this is often to clear the way for the best reply. No railroad officers will hold that intelligence in the ranks is of no consequence; and yet the number of companies which are relying on mere system, without much regard to the intelligence of the men, is perhaps daily increasing. The average grade of this profession, for such it should be, is being constantly lowered, and on some roads the conviction has more or less hold on the men that the company does not desire them to be well-informed about the nicer points of their work—points which were formerly the tests of a man's fitness for the position. They are simply to make schedule time, to pull all trains allotted to them, and send for help if anything breaks. Their engines are inspected, cleaned and repaired—and indeed they have no engines, each man taking the "first in" as his "first out."

This system has undoubtedly grown out of the pressure of traffic, but the question arises whether changes have not gone far enough in one direction. At present there is a tendency to give everything away to economy of time in the movement of freight.

INTELLIGENCE.

Let me attempt a more or less thorough examination of those qualifications which should belong to a man who is to become a good engineer. This thing has been done before; but my mind has recently got new light on this question from a conversation with a master mechanic of long experience, and I shall embody some of his views in an article which he ought to have written.

To begin at the very beginning: An engine-driver needs a nervous system; indeed he is merely a sound, well-regulated, sensitive system of nerves, operating mainly a pair of bicep and extensor muscles.

Such a well-regulated system of sensitive nerves, however, is not to be found anywhere outside a human body; nor in any human body which has not a certain fineness and compactness of texture. No doubt long training will greatly improve the structure of a low-grade nerve, but it will do much less for it than it will for highly-organized nerve tissue. While fair men may be, as it were, manufactured out of poor material, if first-class men are needed, nerves are to be sought which already grade well. Usually such nerves may be found in the body of sound and alert but not necessarily active men; and they often do not keep their full integrity for any great length of time after the man has lost his hold on a few fundamental principles of right action.

RHYTHMS.

More precise and definite reasons may be given why a well organized man is needed for this business. His nerves must be capable of detecting high grades of rhythm, and be able to give attention to all points of his engine and the track at the same moment. A man with a low organization can do neither of these things. His nerves work slowly, they are insensitive to the higher uniformities of sound, and are always liable to become mixed in their action for want of tone—*i. e.*, clearness and sharpness of activity. The man is easily muddled at just that moment when he needs all the sense and quickness there is in him.

These points, the advantage of sensitiveness to high grades of rhythm and an ability for an universal rather than minute and limited watchfulness over all parts of the engine, should be considered together.

The good mechanic is usually a good grade of man, but he has been trained to a minute exactness which unfits him for the best care of an engine. It is his training and not his knowledge, however, which is against him. He forgets the whole in watching a part, and fails in mastering the complicated structure he has built because he is apt to look at it in pieces. He resembles certain scientific men who have spent too much time on pieces of this universe ever to understand it as a whole.

On the other hand, sensitiveness to high grades of rhythm enables the engine-driver to know the condition of everything by the "tune" it plays, and to keep his eyes free for the track and any danger which may lie ahead.

Such a man will suddenly ease the boiler of its water-pressure, perhaps without ever looking at the gauge, and in a moment after be entirely unconscious of what he has just done. Every thing and sound are connected with some action in his mind, and he knows the rate of travel almost by instinct.

"Bill," said the Colonel, who was also Superintendent of the line, "I say, you're getting behind your time." "No, sir," said Bill. "Yes you are," said the Colonel, consulting his watch. "Well," said Bill, "if you can run this engine better than I can, Colonel, you had better do so."

The Colonel was always glad to get his hand on the throttle: and so he took the machine under his control: but in a few moments Bill assured him that he would merely have a certain definite number of minutes to wait at the next station; and the Superintendent became satisfied that Bill knew his time.

STRENGTH.

The engine-man must not, however, be merely wide-awake; he must possess those very qualities which wide-awake men so frequently lack. He must be a steady, patient, enduring and even-tempered man. There must be strength of nerve and some strength of character in him. Even if he fails nowhere else than in the bar-room, he is not fit for the road.

He should be a well organized rather than an intellectual man. These are high-sounding words, but the meaning they convey will not pack into a simple phrase. Above all mental faults, unsteadiness and wool-gathering must not be his. He must live right at home with his work, as an intelligent, practical patient man.

HOW MUCH SHOULD HE KNOW?

Every engineer should have enough ability and knowledge to make a strong and even professional interest in his business and in the locomotive natural and native to him, apart from all questions of wages. If a man works only for pay, he will be a poor workman, and if he does not know enough to understand an engine he is not fit to run one.

The kind of man we have described will seldom be without some sort of education, although he will not probably be given to anything more than buying books. His danger, however, is in too much self-reliance, and an egotistical regard for what he regards as "practical" methods. He should be encouraged to read; and once convinced of the utility of study, he will not entirely neglect books. His natural avenues of knowledge, however, are his five senses aided by the printed page.

PREJUDICE.

For three reasons, however, there is more or less prejudice on the part of everybody concerned against the acquirement of a thorough knowledge of the locomotive by these men.

1st. It is thought that men who know their engines and their dangers well will not have the heart and stomach for fast running.

2d. The ordinary duties of a locomotive engineer can only be learned by actual work on an engine; therefore it is supposed the boy does not need an arithmetic because he has a slate and pencil.

3d. Finally, and this is true in all departments of a railroad, there is a strong tendency to take a merely utilitarian view of life, and to discount any quality or acquirement which does not bring a price in the market. This is not only true as to all intellectual culture, but even as to moral qualities. Curse and swear until the air reeks with profanity—it is of no account if you do not steal the company's coal or iron.

THE RESULT OF ORGANIZATION.

We cannot but regard all these positions as, in the long run, mistakes. With the better organization of companies, where push and energy will become of less account, and fidelity, thorough training and trustworthiness will take their true places at the head, men will be selected for character in all departments, using that word in its widest sense, and not for mere temporary efficiency.

The Fontaine Locomotive.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In the *Gazette* of June 3 you appended to my letter on the Fontaine engine a few remarks by way of criticising its performances, on the ground that the comparison I gave was fallacious, because of taking the calculated performance of the ordinary engine and comparing it with the actual performance of the Fontaine. Now, in adopting that course, I contend that there was nothing unfair in that comparison; as the cylinders of both engines were assumed to be identical, and the relative speed of piston, and the distance supposed to be traveled on the rails, were also taken as equal, it only remained to have the average steam pressure alike on the pistons of both engines to render their conditions equal. The question at issue is, therefore, the coincidence of pressure. In answering the question as to how the steam pressere in the cylinders was determined during the actual performance I will say that it was not taken by an indicator diagram, as experience offers a very close approximation without going through the process of taking diagrams. In the first place, the maximum pressure in the boiler was under 130 lbs., and secondly, the admission of steam to the cylinders was cut off at 75 per cent. of the stroke; therefore, making the usual allowances found in practice for condensation, short admission, and resultant back pressure, there can be very little doubt that the mean effective pressure on the pistons was under rather than over the 100 lbs. assumed.

Your remarks on the experiments of Westinghouse in England, showing that under the most favorable conditions the adhesion of a wheel on a rail is often as much as a third of its weight, is not quite applicable in our case, as the conditions were adverse to favorable, inasmuch as just as we commenced the trial there was a slight fall of rain which made the rails damp and consequently reduced the adhesive resistance probably to a fifth or a sixth of the insistent weight.

There seems a slight touch of facetiousness in your suggested ideal engine of equal tractive power with the Fontaine. In your own words it reads, "with 16×24-in. cylinders, and 7½ ft. wheels, an average pressure of a little over 140 lbs. per square inch on the pistons would give the required tractive power." The equivalent of this, in other words, would seem to say: "An ordinary engine of equal cylinder and wheel proportions would be as powerful as the Fontaine, if there was sufficient steam pressure on the pistons—say not less than 140 lbs. per square inch." Just so, Mr. Editor, but therein lieth the difference of the engines.

The Fontaine does as much work under a pressure of 100 lbs. as an ordinary engine of equal proportions does under a pressure of 140 lbs.

It will be proper to state here that the Fontaine was constructed specially for fast passenger service, and not to represent the best proportions for pulling heavy freight trains, and this leads me to notice another remark in your critique, where, in reference to one of its high-speed performances, you say: "We believe few master mechanics would have any difficulty in equaling that speed (60 miles an hour), with some of their ordinary engines working under similar conditions." I would like to ask, Mr. Editor, what are the conditions to which you refer? The Fontaine has 6 ft. drivers, and an ordinary engine with that size of wheels would have to make 280 revolutions in running one mile as against 224 by the Fontaine, a difference of 25 per cent. in favor of the latter, and, in addition thereto, all the machinery of the ordinary engine would have to perform 25 per cent. more work to make equal speed. There is certainly not any very great difficulty in an ordinary engine with 5½ or 6 ft. wheels running at the rate of 60 miles an hour, but then it cannot do it with the same facility that the Fontaine can; neither can an engine with 7½ ft. wheels (which is really the only engine comparable in the case) perform equal work, except at an extra expenditure of probably 25 or 30 per cent. for fuel to make up for the estimated advantage possessed by the Fontaine.

The whole feature of its superiority is due to its plan of construction, and consists in the continuous application of its full propelling force to the upper part of the auxiliary wheels, whence the power becomes further augmented in a ratio proportionate to the greater leverage of the applied force over the lesser leverage of the opposing force acting at the axle. This superiority can be utilized either in the more economical use of fuel, or in the attainment of increased speed; and as a matter of fact, I believe that the Fontaine can as easily accomplish a speed of 75 miles an hour as a 7½ ft. wheel engine of the ordinary type can 60 miles, under an equal consumption of steam, and consequently an equal expenditure for fuel.

In saying this much, I leave out of consideration any reference to the complication of gearing mentioned (which in reality is not worthy of much consideration), and confine my remarks solely to the principle on which the engine is constructed, which stamps it, in my opinion, as the most economical and fastest-going passenger engine in existence.

JOHN ORTTON, Canada Southern Railway.

ST. THOMAS, Ont., June 28, 1881.

[In the remarks which are appended to the former letter from our correspondent (see *Railroad Gazette* for June 3, 1881), we desired to call attention to the fact that the relative merits of the "Fontaine" and ordinary locomotive could not be accurately determined by the methods employed by our correspondent, or, in other words, that for this purpose, as in all other cases of competing machines, careful trials were necessary before satisfactory conclusions could be reached. As to the increase of power by the introduction of one or more levers, to which our correspondent refers in his present communication, we can only say that while this has been the dream of many an inventor, our present knowledge of natural forces scarcely justifies the conclusion that power can be gained in this way. We would be glad to receive any facts that our correspondent can offer in substantiation of his theories, and would suggest to him that the matter is of sufficient importance to call for careful trials.—EDITOR RAILROAD GAZETTE.]

Big Car-Loads.

BOSTON & ALBANY RAILROAD,
ALLSTON, Mass., July 11, 1881.

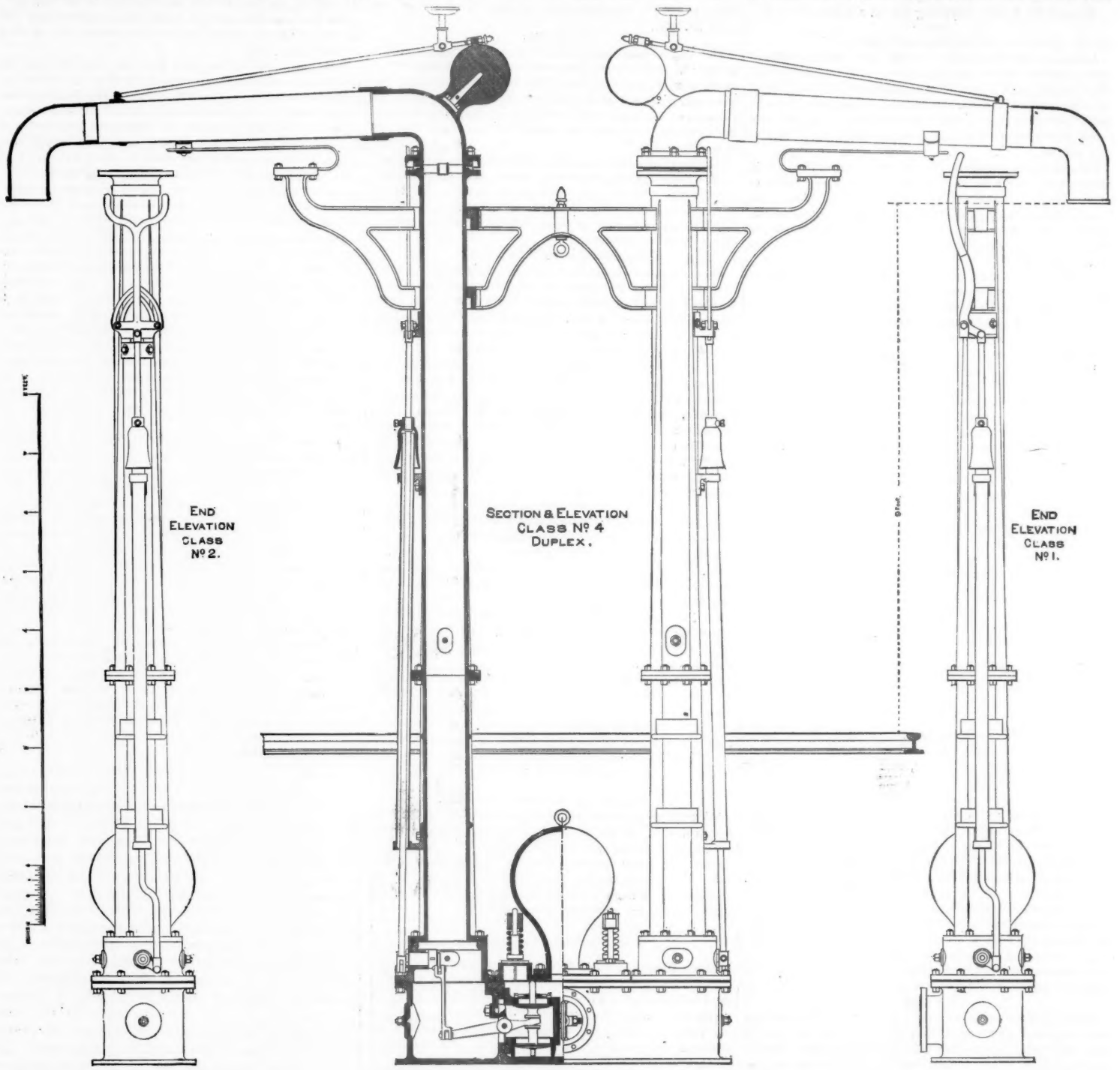
TO THE EDITOR OF THE RAILROAD GAZETTE:

I see an item in your issue of the 8th marked "A Heavy Car-load," as if it were a very heavy load. I do not think it very unusual. I think, however, the weight of car was a mistake, as it does not agree with the other figures.

I would say that we have one of the New England dump cars, eight-wheeled; that the car weighs 19,300 lbs., and we loaded it with 62,000 lbs. of gravel, making over 40 tons, and ran it 12 miles and put it on the scales and found the above weight on the car. It was then run to the place of filling and dumped. It will handle 25 tons easily.

[The item to which our correspondent referred (from the *Coal Trade Journal*), named a load of coal weighing 26 tons 17 cwt. on a Pennsylvania & New York 8-wheeled coal car, weighing 6 tons 3 cwt. In the latter the 6 is evidently a misprint for 9, the total weight of car and load being given as 36 tons. In the coal trade weights are given in long tons. This give

a weight of 60,144 lbs. on a car weighing 20,476 lbs., or 293 lbs. of load to 100 lbs. of car. Our correspondent's car did a little better, carrying 321 lbs. of load to 100 of car. It should be remembered, however, that the Pennsylvania & New York car carried a load of freight on a regular run over the whole road; which is more of a test than a short haul of a construction train. We have heard that years ago, when cars were not so strong as now and when that road was in a comparatively imperfect state, the Burlington & Missouri River road (in Iowa) not seldom found 30,000 lbs. of lumber stowed away in a box car.—EDITOR RAILROAD GAZETTE.]



IMPROVED STAND-PIPE OR WATER CRANE.

By James A. Pratt & Co., West Albany, N. Y.

Improved Stand-pipe or Water Crane.

The frost-proof stand-pipe for railroad water stations, represented by the accompanying engravings, is the invention of Messrs. G. B. Van Vorst and James A. Pratt, both of whom are experienced railroad men, having held responsible positions for many years in the service of the New York Central & Hudson River Railroad Company. Their knowledge of the requirements of this road led them to devise a stand-pipe for water stations that is intended to remove the many evils arising from the use of imperfect machinery for that purpose. It is claimed that the stand-pipe herein described is, first, easy to operate from the tender and delivers water quickly and without waste, other than is necessary to free the column in winter; second, no impact or strain is produced on the joints of the supply pipes by the closing of the main valve; third, it is absolutely frost-proof, and is as easily operated in the most severe as in ordinary weather; fourth, it is strongly built, to withstand the hard usage to which machines of this kind are constantly exposed; fifth, it is simple in construction and easy to understand by the ordinary trackmen of the road, and, sixth, that it is very durable, giving the greatest possible amount of service with little repairing.

That the inventors have succeeded in meeting the requirements of railroad service may be judged by the fact that on the New York Central & Hudson River, the New York & Harlem, the Delaware & Hudson Canal Company's roads, and the Fall Brook Coal Company's railroads, more than a hundred of these stand-pipes are in use. Mr. Charles H. Fisher, Chief Engineer of the New York Central & Hudson River road, gives that road's verdict in the following words:

"We are substituting this stand-pipe for everything of that nature of service on our road."

To meet all requirements four classes of stand-pipes are made. Classes 1, 2 and 3 are single columns; class 4 is a duplex machine, both columns being on one base.

Class 1 (single column) has a quick lever motion, outside connected, is placed on either side of a single track and may be swung in either direction.

Class 2 (single column) has a quick, double-lever motion, is placed between two tracks, and delivers water over both tracks and in either direction.

Class 3 (single column) is inside connected, with screw motion, the lever of the screw being on the end of the crane pipe elbow. This stand-pipe is placed between two tracks and can be connected directly to the mains of city waterworks, where a frost-proof tank is not desired (whether the Holly system of pumping, or single or double-acting pumps be used), and will deliver water with safety to the supply pipes even though they be laid in cement, as is the case in some cities where these stand-pipes are in constant service. A machine of this class has delivered water for years from an elevation of 300 ft., which is equivalent to a pressure of 135 lbs. to the square inch.

Class 4 (duplex stand-pipe) is connected with either screw or lever motion, as may be desired. This stand-pipe is placed between double tracks and delivers water to two locomotives at the same time, independent of each other.

It is unnecessary to detach the locomotive from the train in approaching the column to take water, as the crane-pipe is always in the right direction, *i. e.*, in the direction in which the train is moving. The danger of breaking a column by the crane-pipe coming in contact with the corner of a car is thus entirely obviated.

From the ordinary frost-proof tank these stand-pipes are capable of discharging 2,000 gallons of water per minute through 8-in. supply pipes. Where they are connected to city mains, 4-in. supply pipes are used. The main valve of this stand-pipe is a double balance valve, and the peculiar method of moving it allows it to rotate upon its axis as well as to move in a vertical direction, thereby insuring a water-tight joint, as it continually changes its position upon the seat.

Not only the valves and valve seats, but all other parts of these machines that are liable to oxidize by the action of the water are made of the best gun metal—thus insuring durability.

Should the main valve become obstructed at any time, it is very easy to remove the cover of the valve chamber and reach the valve without disturbing the column. So, also, if by accident the column should get broken, it does not affect the valve, the two being entirely independent of each other.

In setting up these stand-pipes no mason work is required, as neither stone nor brick is used. A wooden crib (plan and elevation of which are shown in illustration of class 3) is all that is necessary. No holding-down bolts are used.

A suitable drain is necessary to carry off the water that remains in the column in cold weather.

This is very important. In warm weather the water is retained in the column.

The upper chamber of crib is to be filled with compost in the winter season.

The different parts of these stand-pipes are fitted to gauges. They are interchangeable, and can be duplicated at the shortest notice. Roads using them are furnished with one or more complete sets of engravings giving the different parts in detail, each part being numbered. If a part gets broken, by accident or otherwise, by communicating with the builders a duplicate of the broken part can be procured without loss of time.

In ordering these stand-pipes it is necessary to state the pressure of water at points where they are to be located. Steam pumps and frost-proof tank valves with inlet and outlet pipes are furnished with these machines if desired.

Railroad companies that may wish to adopt these machines, and that have facilities for building them, will, if they so desire, be furnished with a set of working drawings, and for a reasonable compensation will be allowed the right to build them for their own use, in which right the proprietors of the patents will guarantee to protect them.

The success that has attended these stand-pipes has in-

duced the inventors to secure their inventions by both foreign and American patents. Their address is James A. Pratt & Co., West Albany, N. Y.

The Best Locomotive for Fast Passenger Service.

The following report was presented to the Master Mechanics' Association at its recent convention in Providence:

To the American Railway Master Mechanics' Association.

GENTLEMEN: Your Committee appointed to investigate the subject, "Best Form of Construction of Locomotive for Fast Passenger Service," beg leave to present the following report:

In carrying out the plan adopted by the Association at last annual convention, no circulars were sent out. The chairman sent letters of inquiry to a number of master mechanics and others, asking for information on the above subject.

Part of the number have replied to the same.

The question seems to be to your Committee which of the two classes of locomotives, the American or eight-wheel engine, or the locomotive having one pair of driving wheels and a four-wheel truck, are best adapted for fast passenger service.

What is the limit to high speed is a question yet to be answered.

Some years ago, 30 to 35 miles per hour was considered quite rapid traveling, but in the last few years our business men and others are not satisfied with this rate of speed, but are only suited when they can go at the rate of 50 to 60 miles per hour, or it is even thought the distance between New York and Philadelphia (90 miles) should not exceed 90 minutes in time.

Your committee based their inquiries on 50 miles per hour.

As to the merits of the locomotive with one pair of driving wheels we have not received much practical information, but we are pleased to hear from a number who have had some experience on American railroads with this style of locomotive.

We refer to Mr. James Sedgley of the Lake Shore & Michigan Southern, who says: "For hauling passenger trains required to make 50 miles per hour, my preference is for a locomotive with dimensions as follows:

"Boiler 48 and 51 in. diameter; grate 72 in. long; 180 tubes 2 in. by 11 ft. 4 in. long, giving an area of 18 square ft. grate surface and 1,200 ft. of heating surface in boiler. Cylinders 17 in. by 24 in. One pair of driving wheels 6 ft. diameter placed forward of fire-box, with one pair of trailing wheels behind, and a four-wheel truck forward.

"With locomotives of this description, with a train consisting of one baggage, two coaches and two sleeping or drawing-room cars, I believe they would be fully capable of making easily (without stops) 50 miles per hour."

Mr. Sedgley further says he was connected with a road in 1846, which had quite a number of locomotives with a single pair of driving wheels, the general plan of which was well adapted for fast running.

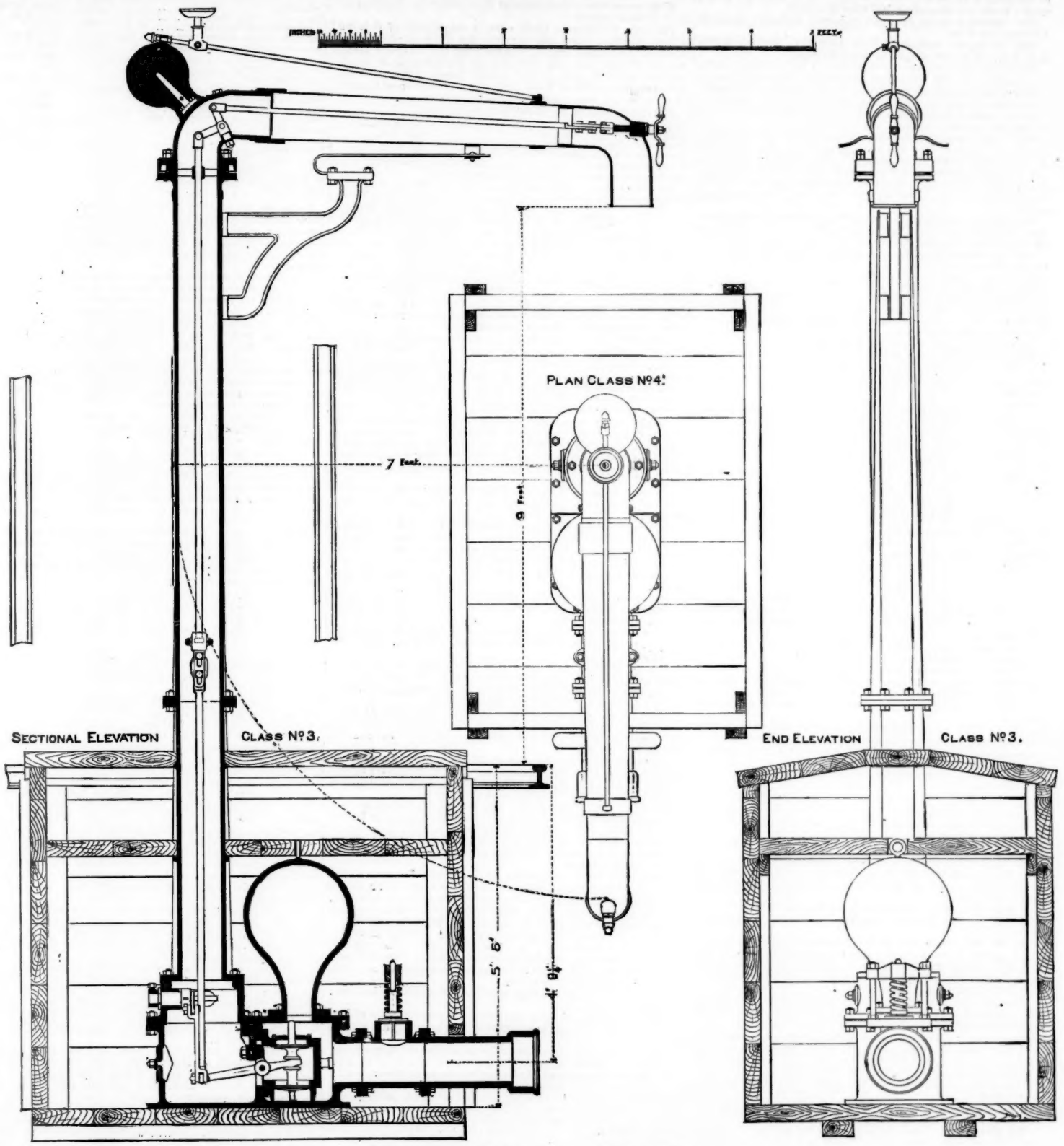
Comparing with eight wheel locomotives, he says they have a class with boiler of the same dimensions as above, with cylinders 17 in. by 24 in., four driving wheels 5 ft. 6 in. diameter, centre to centre driving wheel 8 ft. 6 in., weight 36 tons, which seems to be well adapted for hauling a train of 8 or 10 cars at a speed of 40 miles per hour, evaporating about 6 lbs. of water to 1 pound of coal.

But for 50 miles per hour his preference would be for the locomotive with single pair of driving wheels, so arranged to increase the weight in driver in starting the train. This style of engine possesses features recommending it as less complicated and less liable to give out on the road.

Mr. J. M. Lauder, Superintendent Rolling Stock of the Northern (New Hampshire), says in reference to this subject: "The locomotive with a single pair of driving wheels placed forward of the fire-box has undoubtedly some meritorious features. It being plain and simple in construction, the coupling rods, which are considered a source of danger when high speeds are attempted, are wholly avoided on this class of locomotives. For special service and when very high rates of speed are desired and light trains are possible, it also may have advantages over any other known form. But all locomotives of this design have the same disease, viz: a want of adhesion, and this disease has been fatal in this country by our system of car construction and with heavy trains to be hauled.

"In regard to the American locomotive we have an engine that has sufficient adhesion to give it great power, and is capable of running at as high speeds as the most sanguine could desire. The only element of danger in this class of engines is the liability of the coupling rods breaking. This I believe to be a mechanical difficulty, owing to the faulty design and construction of the rods. I believe a coupling rod can be designed that will stand the strains of service on fast engines with safety." Mr. Lauder furnishes a drawing of a coupling rod that he believes will overcome the difficulty. This rod is somewhat similar to the rods used on the Grand Trunk Railway of Canada, and has been in use for a number of years; and in no instance has one of them broken.

In conclusion he says he is thoroughly in favor of the American or eight-wheel engine for fast passenger servi[ce]



IMPROVED STAND-PIPE OR WATER CRANE.

By James A. Pratt & Co., West Albany, N. Y.

on American railroads—the engine being properly proportioned to suit the road and service required.

Mr. Jacob Johann, Master Mechanic of the Wabash, St Louis & Pacific, would recommend for fast passenger service a locomotive having cylinders 20 in. diameter and 24 in. stroke, with four coupled driving wheels 72 to 84 in. diameter; to have a boiler of sufficient capacity to furnish steam under all circumstances.

He has no doubt but that a locomotive designed embracing the above dimensions and under the care of a competent and intelligent engineer (which he considers an important factor in the matter of fast passenger service) would be able to maintain a uniform speed of from 50 to 60 miles per hour, with a train not exceeding 200 tons in weight.

The running time on his road, stops not included, is about 43 miles per hour.

Size of engine cylinders 15 in. by 22 in., driving-wheel 5 ft. 6 in. diameter, weight of train 70 tons.

With a locomotive having cylinders 17 in. by 24 in., driving wheels 5 ft. 6 in. diameter, weight of train 205 tons, a speed is maintained of 37 miles per hour, stops not included.

Mr. Johann says in his opinion and from his experience he does not believe locomotives with single driving wheels can be run successfully on American railroads.

Mr. A. B. Underhill, Superintendent Motive Power of the Boston & Albany, says the average speed of express trains on their road is 40 miles per hour, each train having from six to eight coaches, about one third of which are drawing-room cars. Average weight of drawing-room car 68,000 lbs., weight of coach 46,000 lbs., carrying 70 passengers each.

He has had no experience with single driver locomotives, and, judging from what he has learned of the performance of that class of engine, is not very favorably impressed.

Mr. Underhill gives the dimensions of this standard locomotive as follows:

Diameter of boiler	50 and 52¼ in.
Number of tubes	175.
Diameter of tubes	2 in.
Length of tubes	11 ft. 2½ in.
Inside fire-box	66 in. by 36 in. by 64 in.
Water spaces, fire-box sides, back and front	3 in., 3 in., 3½ in.
Total heating surface	1,143 sq. ft.
Cylinder diameter and stroke	18 in. by 22 in.
Steam ports, length and width	14¾ in. by 1⅛ in.
Exhaust	14¾ " " 2¾ "
Travel, lap and lead of valve	4¾ in. travel, ⅞ in. lap., 1-32 in. lead.
Diameter driving wheels	5 ft. 6 in.
Diameter truck wheels	30 in.
Centre to centre driving wheels	7 ft. 9 in.
Centre driving wheel to centre cylinder	11 ft. 1 1-16 in.
Total wheel base	23 " 1⅞ in.
Journal driving axle	7 in. by 7 1-16 in.
" truck axle	4½ in. by 8¼ in.
" main-crank pins	3¾ " " 3¾ "
" back-crank "	3 in. by 3 in.
Weight on driving-wheels in working order	44,250 lbs.
Weight on truck wheels in working order	25,150 lbs.
Total weight	69,400 lbs.

Mr. Reuben Wells, Superintendent Machinery of the Louisville & Nashville, says in reference to this subject that they have no fast engines in the sense that term is generally understood.

In designing a locomotive for fast running the first thing to figure on is the boiler.

If steam is furnished at the usual pressure as fast as required, any reasonable good working engine will make as fast time with a train as most people want to travel.

Fast trains are good in their way, but are an expensive luxury.

Mr. Wells gives the dimensions of what he considers their best working engines, on their fast trains, as follows:

Diameter and stroke of cylinder	18 in. by 24 in.
Length and width of steam ports	17 in. by 1¼ in.
Travel of valve, Allen's patent	5 in.
Length of fire-box	72 in.
Number of tubes	200
Diameter of tubes	2 in.
Height of wagon top boiler	6 in.
Diameter of boiler	54 in.
One dome over fire-box.	
Brick arch used in fire-box.	

He says "we cannot run these engines out of steam, and they have made the run from Nashville to Louisville, 185 miles, in five hours, including stops, an average speed of 37 miles per hour."

Train 5 to 6 cars. Grade 40 to 80 feet per mile.

Mr. Wells mentions this to show the result of a good size boiler.

Mr. W. W. Evans, one of our associate members says, in constructing locomotives for fast running, it appears to him that the only great difficulty is in making the reciprocating parts, particularly the connecting rods, sufficiently strong to stand the cross strain on them.

To overcome the difficulty of breaking rods, he suggests the following plan of their construction, viz.: By laying up as close together as possible steel wire, one sixteenth of an inch square, until the size in length and section is obtained, and then bracing them all in one solid mass, in a bath of melted gun metal. Make the rods as light as possible, by planing out the sides, leaving the ends solid.

He believes a rod made in this manner would not break at any speed.

The amount of gun metal in such a rod would be inappreciable, if the work is skillfully done.

Mr. Evans says this process is the same as that by which the "Woodbridge Cannon" are made and which are said to be the only cannon which have never burst.

He is of opinion that a bar made up in the above way would be able to stand a tensile strength of 160,000 lbs. per square inch.

He is not in favor of locomotives having one pair of driving wheels, the tendency being to put too much weight on that pair, which would be severe on this permanent way, as proved by this class of locomotives in England.

Another difficulty to overcome is the journals heating, which he believes can be remedied by having the axles made of homogeneous metal, turned true as possible, brasses good and properly fitted, journals never over loaded, and the lubricant good and continuous; under these conditions they should never heat.

A letter is here appended from F. M. Wilder, Superintendent Motive Power of the New York, Lake Erie & Western, giving his views on this subject, including dimensions for a passenger locomotive to burn bituminous coal; also some interesting statements on traction derived from dynamometer tests made on the above road.

Mr. Wilder gives the average speed on their road at 40 to 45 miles per hour for 428 miles. Your committee recommended that the letter be read and printed in the minutes.

Much has been said and written in reference to the high rate of speed attained in Europe by locomotives with a single pair of driving wheels, and desiring to get some reliable information as to the sizes, rate of speed, etc., of the same in use there, a member of the committee, Mr. John Ortton, Mechanical Engineer of the Canada Southern (who is familiar with the performances of English locomotives), has prepared a statement of the same, including his own views on this subject.

He also furnishes a description of the Fontaine locomotive recently placed on this road for trial.

We have also a letter from Mr. Jas. Boon, Master Mechanic of the Pittsburgh, Ft. Wayne & Chicago (member of committee), and who has had quite some experience with locomotives running fast passenger trains, and has recently built several new locomotives for this service; a description of the same is included in letter.

Your committee recommended these letters be included as part of their report.

The only locomotive built with a single pair of driving wheels (for fast passenger service) for quite a number of years in the United States, was built by the Baldwin Locomotive Works, in April, 1880, for the Philadelphia & Reading Company, to run on the Bound Brook Line, between Philadelphia and New York, and was built to run at a speed of 60 miles per hour, using anthracite coal as fuel.

The dimensions of the same were as follows:

Cylinders	18 in. by 24 in.
Diameter of driving wheels	6 ft. 6 in.
Diameter of trailing wheels	45 in.
Diameter of truck wheels	36 in.
Total wheel base	21 ft. 1 in.
Distance from centre of driving to centre of trailing wheels	8 ft.
Size journals truck axles	5 in. by 8 in.
" " driving "	8 in. by 9½ in.
" " trailing "	7½ in. by 8½ in.
" " tender "	5 in. by 8 in.
Diameter tender wheels	36 in.
Diameter boiler at smoke-box end	52 in.
Diameter tubes	2 in.
Number of tubes	198
Length of tubes	12 ft. 2¾ in.
Length of fire-box	96½ in.
Width of fire-box	84 in.
Depth of fire-box	44 in. and 51 in.
Total amount of heating surface in boiler	1,400 sq. ft.
Feed water supplied with two injectors	
Steam ports	1⅝ in. by 16 in.
Exhaust ports	3 in. by 16 in.
Allen valve ⅞ lap	
Capacity of tender	4,000 galls.
Weight on driving wheels,	lbs 35,000 to 45,000
Weight on trailing wheels,	" 15,000 to 25,000
Weight on truck wheels	" 25,000
Weight on engine in working order	" 85,000

By the use of an auxiliary steam cylinder placed under the waist of the boiler, in front of the fire-box, the bearings on the equalizing beams between trailing and driving wheels could be changed to a point forward of their normal position, so as to increase the weight on the driving wheels when required.

The adhesion could thus be varied between the limits of 35,000 to 45,000 pounds on the single pair of driving wheels.

Your committee had hoped to have been able to furnish some records of the performance of this engine, but on account of its not being in regular service, no records could be obtained, except the account of a trial trip made between Philadelphia and Jersey City, a distance of 89.4 miles.

The train consisted of 4 passenger cars and left Philadelphia at 11.16 a. m., arriving at Jersey City at 12.54 p. m., time 98 minutes.

On return trip with 5 passenger cars, left Jersey City at 2.07 p. m., arrived at Philadelphia at 3.47 p. m., time 100 minutes.

During the trip a distance of 2.8 miles was run in 2 minutes on an ascending grade of 16 ft. to the mile. It was thought this engine would be capable of running at a speed of 75 miles per hour, with a train of 10 cars.

The Philadelphia & Reading Company have built at their own shops two locomotives, expressly for fast passenger service, said to be the largest passenger engines ever built in the United States.

These engines are in service at the present time on the Bound Brook Line, running between Philadelphia and Bound Brook, a distance of 59.2 miles. These engines are capable of making very fast time, as shown by the reports.

In July, 1880, engine No. 506 hauled 15 passenger cars, carrying nearly 900 passengers, from Philadelphia to Bound Brook, the ruling gradient being 59 ft. rise per mile, at an average speed of 42 miles per hour. The aggregate weight of train and passengers, exclusive of engine and tender, being in excess of 360 tons.

At another time engine No. 411 hauled 10 loaded passenger cars from Philadelphia to Bound Brook in 1 hour and 19 minutes, making usual slowing up for two miles of bridging.

Several diagrams have been taken from these engines when running at a speed of 72 miles per hour on a level.

Boiler pressure 105 lbs. per square inch, cutting off at 8⅝ in. Train consisted of 4 passenger cars. The regular schedule time on fast line between Wayne Junction and Bound Brook (54.9 miles) is 64 minutes, including one stop, and slowing down three times.

This involves an average speed of 56 miles per hour for nearly 55 miles.

The peculiarity of these engines is the construction of the boiler, which is expressly adapted for burning anthracite coal.

The fire box is placed entirely above the driving wheels, its exterior width being 8 ft. 8 in., and its length 10 ft. 5 in. The general dimensions of the engine are as follows:

Cylinders	21 in. diam. 22 in. stroke.
Diameter driving wheels	5 ft. 8 in.
Centre to centre driving wheels	7 ft.
Diameter truck	33 in.
Diameter boiler	58 in. to 52 in.
Number of tubes	184
Diameter of tubes	2 in.
Length of tubes	10 ft. 2⅛ in.
Length of fire-box inside	9 ft. 6 in.
Width of fire-box inside	8 ft.
Great area	76 sq. ft.
Heating surface of tubes	982 sq. ft.
Heating surface of fire-box	135 sq. ft.
Total heating surface	1,117 sq. ft.
Exhaust nozzle single (variable)	3¾ to 5¾ in. diam
Wheel base	21 ft. 1 in.
Weight on driving wheels	64,250 lbs.
Total weight of engine	98,200 lbs.

The above engines are said to possess good steaming qualities, which would be expected from the dimensions of heating surface, especially grate area, which is necessary for the successful burning of anthracite coal.

The Chairman of the Committee says his company (Central, of New Jersey) have recently placed on their road two very large and powerful engines, built for heavy fast passenger service, designed to haul 12 fully loaded passenger cars from New York to Long Branch, a distance of 45 miles, in 60 minutes.

Including ferry, holding up for draw-bridges, crossings, etc., in a trial trip a few days since, one of these in running from Elizabeth to Bound Brook, on Philadelphia line, a distance of 19 miles, made the run in 20 minutes, with 4 passenger cars.

Also on another trip, the engine developed a speed at the rate of a mile in 48 seconds.

The engines have not yet been assigned to a regular train, but he has no doubt they will establish a good record.

These engines are built to burn anthracite coal, having large fire-box and boiler.

The fire-box being placed directly over the top of frame, thus allowing increased grate area.

The boiler being placed in this manner does not seem to interfere with the steadiness of the engine, when running at a high rate of speed; they ride very well for engines of this size.

The general dimensions are as follows:

Cylinders	19 in. by 24 in.
Diameter driving wheels	5 ft. 8 in.
Diameter truck wheels	32 in.
Centre to centre driving wheels	7 ft. 6 in.
Diameter boiler at smoke-box end	52 in.
Number of tubes	200.
Diameter of tubes	2 in.
Length of tubes	11 ft. 5⅞ in.
Length fire-box inside	120 in.
Width of fire-box inside	43¾ in.
Heating surface fire-box	140 sq. ft.
Distance from centre boiler to rail	82½ in.
Steam ports	1⅝ in. by 16 in.
Exhaust ports	3 in. by 16 in.
Travel valve	5½ in.
Allen valve	
Total wheel base	21 ft. 8 in.
Weight on driving wheels	68,000 lbs.
Total weight	93,200 lbs.

From the information received, and with what experience your committee have had in reference to this subject, they are of the opinion that for express passenger service, under all circumstances, that American or eight-wheel engines are the best adapted to meet the wants required on American railroads.

The dimensions of the same to be worked out to suit the service, grade and condition required on the several roads.

It would be difficult for your committee to specify or furnish plans or dimensions of engines for this service.

They can only say what should be some of the special features; and first of all we would say, furnish ample boiler capacity. We think this is the most essential thing to be considered, in designing a locomotive for fast running. This has been referred to in former part of the report.

Another feature would be to reduce the length of coupling rod as short as possible. That, to a great extent, will lessen this danger of breaking rods.

For supplying feed water to the boilers, use injectors and avoid the difficulty of keeping pumps in repairs which is no small item.

We are of the opinion that with cylinders 18 in. diameter and 24 in. stroke, driving wheels 68 or not to exceed 72 in. diameter, and with boiler of sufficient capacity to furnish steam under all conditions, with a steam pressure of 140 lbs. per square in. there will be no difficulty in maintaining an ample speed of 50 miles per hour with a train of 5 to 6 cars.

While it seems to be a necessity to run passenger trains at high speed, your committee thinks it involves increased cost of repairs and requires careful attention on the part of those under whose care this class of engines comes and makes it, as has been said, an expensive luxury.

Very respectfully submitted.

WM. WOODCOCK, M. M. C. R. R. of N. J.
JAS. M. BOON, M. M. P., Ft. W. & C. R. R.
JOHN ORTTON, M. E., Canada S. R. R.
Committee.

LETTER OF MR. WILDER.

Wm. Woodcock, Esq., Chairman of Committee to Inquire as to "Best Form of Construction of Locomotive for Fast Passenger Service."

DEAR SIR: In reply to your letter inquiring as to the best design of passenger locomotives I would say that I think there is no difficulty in running at an average rate of speed of 50 miles per hour with almost any of our eight wheeled American locomotives, having driving wheels 5 ft. 6 in. and over.

The problem is one which depends for solution upon many contingencies, viz: The condition of the track, grades, curves, weight of train, etc. I believe that the locomotives of our American pattern having driving wheels 5 ft. 6 in. diameter with 18 in. by 22 in. cylinders, with 5 in. throw of eccentric, steam receiving ports, 1 in. by 16 in., exhaust ports, 2¼ in. by 16 in., valves, having ⅞ in. outside lap, no inside lap, with about $\frac{1}{16}$ in. lead; with boilers suitable to generate steam to supply the cylinders, working say 8 in. with a full throttle, would have no trouble, on a level road, in drawing five coaches at an average rate of speed of 50 miles per hour.

How long the engine will endure to run at that high rate of speed depends almost entirely upon the condition of the track. If the joints of track are all kept in good condition there will be no trouble from excessive cost of repairs, even at such a high rate of speed.

I append hereto statement of boiler dimensions which I think are ample to fill these conditions. I do not think that the weight upon drivers should exceed 12,000 lbs. to each wheel. You will find very good results from using broad wheel centres, say 8 ft. 6 in., which gives ample room to put in desired length of fire-box; total wheel base 22 ft., with swing beam truck.

On this road we have no trains denominated "fast passenger," although we have trains with schedule time of 34 miles per hour for 428 miles, which have to run from 40 to 45 miles per hour to make their schedule time on account of the long stops necessary.

In regard to fuel, I prefer bituminous coal, as I consider that more reliable than anthracite coal, where a long, steady fire is to be kept up. We have had no experience with engines having only one pair of driver wheels in running passenger trains. There is no doubt at all that if your train is light enough so that enough adhesion can be obtained, without excessive weight, one pair of driver wheels is preferable, but that is very hard to do.

I consider that after you have arrived at the point where the tire and rails receive a certain permanent set at their point of contact, though it be very little, after awhile the metal near the surface of the rails and tire loses its cohesion and both laminate and peel off. I think 12,000 lbs. is a perfectly safe weight to apply to a single driving wheel, while 16,000 lbs. will give a weight which is above the elastic limit of the material. There is no doubt at all if you apply a weight which is greater than the elastic value of the material, the value of the factor for adhesion is largely increased, as the tendency is to tear the rails and raise up little points which will interlock each other like teeth; for that reason I think that it is necessary in passenger engines to keep the weight below 12,000 lbs. per driving wheel. I have found by dynamometer experiments, which I have made, that about 22 per cent. of the weight upon driving wheels (12,000 lbs. to each wheel) can be relied upon as tractive force, which can be exerted on ordinary good rails, *i. e.*, with an engine having 24,000 lbs. on driving wheels, we might expect that we could get 5,000 lbs. tractive force to apply to driving on the train. This would be sufficient for light passenger trains, say, a train of

from 4 to 6 cars, after they have started, but would not be nearly sufficient for starting them away from stations promptly, and would only be reliable for trains of from 2 to 3 cars.

In conclusion I would say that with trains of from 2 to 3 cars, weighing about 120 tons, I think an engine with one pair of driving wheels, and a weight of not over 12,000 lbs. to each wheel, having say 16 in. by 24 in. cylinders, driving-wheel centres 6½ or 7 ft., would probably be the best engine that could be used. Then, if your trains should necessarily consist of 5 or 6 cars, weighing from 200 to 250 tons, your engine should be an eight-wheeled connected engine, having 18 in. by 24 in. cylinders, with 6 ft. driving wheels, with a weight of say 12,000 lbs. upon each driver.

I have had very little time to consider the subject further than your inquiry has brought it to my mind, and I regret that I could not have given it more attention.

I submit myself, very truly yours,

FRANCIS M. WILDER.

DIMENSIONS OF ENGINE.

Size of cylinder	18 in. diameter, 22 in. stroke.
Diameter driving wheel	62 in. centre, 68 in. outside of tires.
Weight on drivers	48,000 lbs.
Size of boiler	50¼ in. outside diameter smallest course.
" " fire-box	73 in. long by 34¼ in. wide inside of water space frame and 66¾ in. high from bottom of frame to under side of crown sheet.
Number, diameter and length of flues	168—2 in. outside diameter—137 in. long between tube plates.
Heating surface	Flues 1,003 sq. ft.; total, 1,109 sq. ft.
Driving wheel base	8 ft. 6 in.
Total " "	23 ft.

LETTER OF MR. BOON.

Wm. Woodcock, Esq., Chairman of Committee on "Best Form of Construction of Locomotives for Fast Passenger Trains."

DEAR SIR: The above subject is a complicated one, as in constructing a locomotive for fast passenger service a number of conditions have to be considered, such as the weight of trains, grades, curvature of road, distance run without stops and kind of fuel used.

There are but few roads in this country whose passenger business will justify them in building special engines for fast trains.

The business being very irregular, one day three coaches are sufficient, and on another day six or nine coaches are required, and engines must be provided to make time with any train until the limit of the power of the engine is reached.

The requisites of an engine for this business would be power, adhesion and boiler capacity; one that would start quickly and attain speed in the shortest possible time, and when running, to do the work with an economical consumption of steam and fuel. This is the problem, and I apprehend it is a more difficult one than most people have any idea of.

I do not think any special form of construction is necessary for high speed locomotives; I believe that the ordinary American locomotive with two pairs of drivers, when properly designed and constructed, is capable of making any speed required.

Engines with a single pair of drivers have been tried, and are now used in Europe, and are effective so long as the weight of the train is below the adhesion of the drivers; as soon as it exceeds this, the wheels slip.

When the adhesion is made great enough to overcome the resistance of a heavy train, the weight on the single pair of drivers becomes too great for the strength of the rails, which are then destroyed.

There is a limit to the strength of rails though they be made of steel; this limit is reached for 70-lb. rails when the weight on each driver exceeds 15,000 lbs.

Of course the rail could be increased in weight and strength, buf it is not likely that railroad companies would be willing to relay their lines with heavier rails to enable them to use a special engine for passenger service.

A locomotive with 17 in. by 24 in. cylinders and four drivers 5 ft. or 5½ ft. diameter, makes a very good class of engine for general passenger service for either fast or slow trains.

The enormous evaporation capacity of the boiler of such an engine is shown by the performance of our class "A" engine hauling 9 cars at an average speed of 35 miles per hour.

The consumption of water was 14,500 lbs. per hour; consumption of coal was 2,900 lbs. per hour, and 160 lbs. coal burned per square foot of grate per hour.

This intense combustion and rapid evaporation is required for a 52¾ in. boiler to supply 17 in. by 24 in. cylinders when the engine is worked to its fullest capacity.

The theoretical weight for adhesion can be obtained with cylinders of this size and very satisfactory results obtained.

By increasing the size of the cylinders over 17 in. the difficulty of efficient steam supply and adhesion becomes apparent.

Increasing the diameter and reducing the stroke of the cylinder is now being discussed; I have not gone into the subject far enough to express an opinion, but it appears to me it would be an advantage.

On roads where stops are frequent a 5 ft. driver with 17 in. by 24 in. cylinders will do good work.

I know there are many persons who claim that a speed of 60 miles per hour cannot be made with a 5 ft. driver and ordinary train. I also know this to be a mistake, as there is no difficulty in doing it. The piston speed is high, but it is claimed that the most effective stationary engines built are those with high piston speed. If this is the case with a stationary engine, why should it not be equally true for a locomotive? For long distance runs a 5½ ft. wheel would be an advantage if the grades were low; with heavy grades the 5 ft. wheel would give best results.

The details for a fast locomotive should be carefully worked out. Large steam pipes with few turns, valves with a large cavity, and a free discharge from exhaust should be provided. The Allen valve will be found very effective.

The boiler should be fed with injectors; pumps with an engine of this class are a constant annoyance, and time is frequently lost from their failure to work.

Large bearings with cups, to freely lubricate for the whole run, should be provided.

The parallel rods should be of steel and made as light as possible; a large per cent. of parallel rods break because they are too heavy.

Lastly, it should be borne in mind that a locomotive with a given sized cylinder, boiler pressure and weight on drivers, will haul a given number of tons at a given speed. When the load is greater with the same conditions, time will not be made.

The moral of this is: Do not put more cars on the train than the engine will haul and make schedule time.

Yours truly, JAS. M. BOON.

LETTER OF MR. ORTTON.

To the American Railway Master Mechanics' Association.

GENTLEMEN: In reporting as to the "Best Form of Construction of Locomotives for Fast Passenger Trains," your committee must be guided chiefly in their remarks by what has been and is being done, upon those roads which professedly run trains on fast time schedules, preferring that course rather than dealing in theories which, more or less, would be only of speculative value.

In the United States and Canada, the type of engine generally adopted for passenger service, is that known as the eight-wheeled American pattern, having two pairs of coupled driving wheels of 5½ ft. or 6 ft. diameter, and cylinders 16 or 17 in. diameter by 22 or 24 in. of stroke. Engines of these dimensions are seen daily hauling passenger trains of from 5 to 7 cars, weighing from 120 to 150 tons, and running at the rate of 40 to 50 miles per hour, where the road is tolerably level and straight; but with the loads and speeds stated, the full tractive power of the engines appears to be fairly taxed.

On some of the principal roads in England there are but two types of engines used for passenger service; one is that having single driving wheels of 7 ft. or 7½ ft. diameter, and the other is that with two pairs coupled, of 6½ ft. or 7 ft. diameter. The one with single drivers has been for many years the standard adopted on the London & Northwestern, and also on the Great Western Railway, the only difference between them being that of construction necessarily involved by a difference of gauge, the former road being the ordinary 4 ft. 8½ in. gauge, and the latter the 7 ft. gauge. The engine with coupled drivers is in more general use on other roads, where trains are heavy and stoppages are frequent, but, as a matter of fact, the single driver engine is considered better adapted for speeds of 50 to 55 miles per hour, with light trains and long runs.

One special advantage favoring high speeds on English roads is the fact that, almost invariably, trains of all classes are started and run throughout strictly in accordance with schedule time tables, besides which, very complete arrangements are carried out for running both passenger and freight trains, so that there is barely a possibility of rear collisions; and as a rule, all bridges and viaducts are substantially built of either iron or stone, so that no slackening of speed is necessary when running over them.

The following are the leading particulars of the single driver class, called the "Lady of the Lake," adopted as the London & Northwestern Railway standard passenger engine.

Outside cylinders	16 in by 24 in.
Driving wheels	7 ft. 7½ in. diam.
Leading and trailing wheels	3 ft. 8 in. diam.
Steam pressure in boiler	125 lbs. per sq. in.
Blast orifice	4½ in. diam.
Height of centre of boiler above the rails	6 ft. 6 in.
Length of wheel base	15 ft. 5 in.
Weight on wheels in working order:	
Leading	21,056 lbs.
Driving	25,760 "
Trailing	13,664 "
Total	60,480 "
Area of fire-box grate	14.9 sq. ft.
Fire-box heating surface	85 sq. ft.
No. of tubes	142
Length	10 ft. 9 in.
Outside diameter	1⅞ in.
Tube heating surface	1,013 sq. ft.
Total heating surface	1,098 sq. ft.

The engine has a fire-brick arch, and two small openings in the front sheet of fire-box for air passages, closed by regulating doors. The weight of tender loaded is 39,200 lbs. The tender is fitted with apparatus for picking up water from a trough laid between the rails, which is effectually done while running at any speed over 15 miles per hour. By picking up water at Conway, this engine has run a distance of 130 miles, from Holyhead to Stafford, without stopping.

On the Southern Division of the London & Northwestern Railway, a large number of single driver engines, called the "Bloomer" class, were employed for many years in running the fastest trains, and gave most excellent results, rivaling the "Lady of the Lake" class, and in many respects carrying off the honors. The following are the leading particulars of the "Bloomer" engine:

Inside cylinders	16 in by 22 in.
Leading wheels	4 ft. 6 in.
Driving "	7 ft. 0 in.
Trailing "	4 ft. 0 in.
Extreme wheel base	16 ft. 10 in.
Weight of engine in working order:	
On Leading wheels	22,170 lbs.
" Driving "	27,664 "
" Trailing "	15,120 "
Total	64,960 "
Length of fire-box inside	5 ft. 3 in.
Width " " "	3 ft. 7 in.
Area of fire grate	18.81 square feet.
Number of tubes	195
Length " "	12 ft. ⅛ in.
Outside diameter	2⅛ in.
Heating surface of fire-box	165 sq. ft.
" " " tubes	1,152 "
Total	1,317 "

This engine has run at the rate of 55 miles an hour, with a train of 18 carriages, weighing 108 tons, the consumption of fuel being 36 pounds of coal per mile, and evaporating 7.34 pounds of water per pound of coal.

Of the four-wheeled coupled passenger engines used in England, one of the best of that class is in general use on the London & Southwestern Railway, and it is well adapted for hauling trains of 150 to 200 tons, at a speed of 45 miles an hour; the consumption of coal being under 30 pounds per mile. The following are the leading particulars of this engine:

Outside cylinders	17 in. by 22 in.
Driving wheels, 4 coupled	6½ ft. diameter.
Fire-box length inside	5 ft. 4 in.
Fire-box width inside	3 ft. 4 in.
Grate area	17¾ square feet.
Number of tubes	242
Length of tubes	10 ft. 1⅝ in.
Outside diameter	1 9-16 in.
Heating surface of fire-box	121 square feet.
Heating surface of hollow stays	36 " "
Heating surface of tubes	992 " "
Total	1,149 " "

The weight of this engine, in working order, is about 36 tons, of which the weight on drivers is 24 tons.

The economy in fuel with this engine is due to a feed water heating apparatus, which was a patented appliance invented by the late Mr. Joseph Beattie, who for many years was Locomotive and Car Superintendent of the road.

On the Canada Southern Railway, it is an every day occurrence to run passenger trains of four or five cars, weighing from 125 to 150 tons, at the rate of 45 or 50 miles an hour, and frequently at a much higher speed, with engines having cylinders 16 in. by 22 in., and four coupled driving wheels of only 5 ft. 6 in. diameter, the steam pressure in boiler being at 125 lbs. per square inch. It is, however, only fair to say that the road is, practically, both straight and level, and pre-eminently suitable for fast running. The sharpest curves, which are very few in number, being only 3 degrees, or 1,916 ft. radius, while the heaviest grades also few in number, do not exceed 15 feet to the mile, or 1 in 352.

With such advantages in the roadbed, and its splendid track, there has been no difficulty experienced in running over it at the very highest speed attainable by the above class of engine, which, not unfrequently, has been at the rate of 60 miles per hour and over, for long distances, with trains weighing about 75 tons. The travel of the pistons, when the engine is running at 60 miles an hour, is 1,121 ft. per minute, which shows the necessity of having the driving wheels properly and correctly balanced, to counteract the effect of the reciprocating and revolving masses, as concentrated at the crank-pins. Unless these disturbing masses are accurately counterbalanced, it would be absolutely unsafe to run the pistons at such an enormous speed, but all parts being properly conditioned, there does not appear to be any particular limitation to the speed of the piston while under steam pressure.

There is, however, one feature in the construction of engines intended for high speeds which deserves some consideration, and it is this—whether, as a question of safety, the coupling rods should be dispensed with or retained? Long experience with single driver engines has proved them capable of hauling heavy loads at the highest speeds, and that being a fact, is it desirable to continue our practice of building high speed passenger engines with coupled drivers, and especially those intended for moderately light trains. It is, doubtless, well known to the majority of master mechanics that the breaking of crank pins and coupling rods is an occasional source of anxiety, and not unfrequently they have proved disastrous both to life and property. With well-balanced wheels, and the coupling rods shaded deep and thin, so as to give them elasticity and freedom when running around curves, the tendency to break may be minimized, so to speak, but nevertheless, danger lurks within and about them, from the very nature of their performances as they are whirled to and fro, and yet, after all, they are not absolutely necessary appendages to be retained at all risks.

In concluding this report, it may be proper to mention that there is now in actual service a new type of engine known as the "Fontaine" engine, from the name of its inventor, Mr. Eugene Fontaine. This engine is constructed on an eminently novel principle, and so far as its powers have been developed it appears to possess the remarkable qualification of being capable of acquiring a speed far beyond that of any other type of engine of equal piston power.

An engraving of the Fontaine engine was given in the *Railroad Gazette* dated Feb. 25, 1881, from which it will be better understood, at a glance, than by any description in writing. It will be seen that the driving wheels and connecting machinery are mounted near the top of the boiler; and directly below the driving wheels are another pair of a double construction, forming, as it were, ordinary wheels for running upon the track, with auxiliary wheels of smaller diameter, projecting outside, but solid with the inner ones. The rims, or tires, of the auxiliary and the upper wheels are turned cylindrical, and the distances apart exactly correspond with each other.

The upper or driving wheels communicate the motive power to the auxiliary wheels by friction, and as the latter are solid with the track wheels any movement of the upper wheels causes a corresponding movement of the lower ones, in a ratio proportionate to their respective circumferances or diameters.

The diameter of upper wheel is 72 in.

The diameter of auxiliary wheel is 56 in.

The diameter of track wheel is 70 in.

By dividing the number of feet in a mile, by the circumference of the track wheel, we get the revolutions it will make in one mile, thus $\frac{5280}{18.326}$ = 288 revolutions, and multiplying 288 by the diameter of auxiliary wheel (56), and dividing the product by the diameter of the upper wheel (72), we get the number of revolutions the upper wheel will make in a mile, thus $\frac{288 \times 56}{72}$ = 224 revolutions of upper wheel.

And as the stroke of piston is 2 ft., multiplying the revolutions of upper wheel by 4 (the length of double stroke), we find the travel of piston per mile will be 224 × 4 = 896 feet per mile; and at the rate of a mile a minute, or 60 miles an hour, the speed of piston with this engine will be only 896 ft. per minute, which is about 23 *per cent. less* than the piston of an ordinary engine would travel, if the engine was running 60 miles an hour.

The engine has shown some remarkable results in its performances, both for fast speed and hauling heavy loads, but as it has not yet undergone complete tests, it may be better to wait the results of investigations now going on before making them public.

Respectfully submitted, JOHN ORTTON.

New York Street Railroad Stocks.

In spite of the elevated roads the stock of the street railroads in New York does not seem to fall below par. None of the companies are quoted on the Stock Exchange, but at an executor's sale on July 13 Eighth Avenue stock brought 195; Forty-second & Grand Street Ferry, 212; Third Avenue, 238. Thus Third Avenue stock, with an elevated line right over it for its whole length, still sells at considerably over twice its par value.

New Cars.

The Chicago & Northwestern car shops, at West Chicago, are building 4 first-class coaches, 4 combination cars, one baggage car, rebuilding a superintendent's car, and are getting out the material for 6 more coaches. These coaches have 6-wheel trucks, the bodies are 54 ft. long and seat 58 passengers. The inside finish is cherry trimmed with mahogany, and head linings of decorated oak. The combination cars are 50 ft. long, with 8-wheel trucks having a wheel-base of 8 ft. The mail compartment is 12 ft. by 7 ft. 7 in., the express and baggage room 19 ft. by 7 ft. 7 in., and the main room 17 ft. 6 in. long, with seats for 36 passengers. The mail room is arranged according to Harrison's patent, which is the last adopted by the Post-Office Department. The shops have also just finished 30 cabooses, 30 ft. long, with regular passenger trucks. The raised floor of the clear-story on one side is built up from the floor of the car, and on the other side the floor is suspended from the roof by iron rods, making storage room underneath for trunks, etc. The car has the usual brake and side seats or bunks, with boxes underneath, and, what is not so common, a lavatory in one corner and a saloon opposite. The cars are painted throughout, the exterior being a bright vermilion. They have four windows on a side, two at each end, and a baggage door on each side, for on many of their branch roads freight trains carry passengers and their baggage.—*National Car-Builder.*

RAILROAD GAZETTE

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S WRIGHT DUNNING AND M. N. FORNEY.

CONTENTS.

EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published*

TRAFFIC, RATES AND PROFITS.

It is not easy to estimate the effect of low rates on through freight on the different railroads, because we have definite information as to the amount of their through traffic for but very few of them; and, further, the reduced rates increase the traffic, but in very different proportions on different roads. The roads carrying from Buffalo probably increase their traffic by low rates more than any others, because they take a great deal of freight that, if rail rates were remunerative, would go by canal. The roads carrying from Chicago and other Western lake ports appear at first to increase their traffic greatly, but this is more apparent than real; they doubtless carry more than they otherwise would for a time after rates are reduced, and especially at such a time as this, when a part of the traffic of the winter and spring has been delayed until June and July; but taking the whole year together it is doubtful if they increase their business very much by the lower rates. This conclusion is justified by the fact that they have not deprived the lake vessels of cargoes, nor, perhaps, the Mississippi barges. The lake shipments since the rail rate was reduced to 15 cents per 100 lbs. have been as great as before, and all the vessels arriving at Chicago and Milwaukee have secured loads promptly and at remunerative rates. The railroads have carried more than usual; but if they had maintained rates they certainly would have carried a great deal, probably not quite so much just now, but more later in the season; because the grain would have accumulated at the lake ports, the vessels not being able to carry it all, and when the new crop began to come forward, holders would have been compelled to ship it; and, as we have seen, the vessels already have all they can do. How the shipments by rail, Mississippi River and lake, have been affected, may be seen by the following table, which gives them for each week since navigation opened, together with the percentage of the total shipped each week by rail and river.

Shipments of Grain from Northwestern Markets by Rail, River and Lake, in bushels.

Week ending.	By rail. Bushels.	P. c. of total.	By river. Bushels.	P. c. of total.	By lake.	Total.
May 7...	1,503.111	30.2	365,895	7.5	3,105,834	4.974,840
" 14...	1,039,250	25.6	442,889	10.8	2,617,205	4,099,344
" 21...	1,755.217	28.2	730,401	11.7	3,742,657	6,228,275
" 28...	1,958,493	32.4	532,388	8.8	3,556,255	6,047,138
June 4...	1,538,657	31.2	607,460	12.3	2,790,603	4,936,720
" 11...	1,634,114	26.4	369,674	5.0	4,234,406	6,178,194
" 18...	1,864,794	34.3	339,149	6.2	3,232,304	5,436,247
7 weeks..	11,293,636	29.8	3,327,856	8.8	23,279,264	37,900,756
Weekly average .	1,613,377		475,408		3,325,609	5,414,394
June 25..	3,566,702	47.8	547,000	7.3	3,343,057	7,456,759
July 2...	2 542,753	40.6	263,039	4.2	3,453,881	6,259,673

From an average of 1,613,377 bushels shipped by rail from the opening of navigation to the time of the 15-cent rate, there has been an advance to an average of over 3,000,000 bushels in the two weeks after the reduction; but in one of these weeks the river shipments were above the average, and in both of them the lake shipments were above the average of 3,325,000 bushels which the vessels took before the reduction. Even 3,000,000 bushels a week is not a heavy traffic for the railroads. When navigation is closed they often carry more than that at 35 or 40 cents per 100 lbs. The gross earnings on it are not more than $270,000, distributed among a very large number of roads, and about the same as was taken in at this time last year for carrying grain, though then but half as much was carried. Moreover, there is a corresponding decrease in rates on the large provision shipments, and these are not increased at all by the low rates.

Further evidence that the stimulation of traffic by very low rates is greatest when they are first reduced is given by the course of shipments from Chicago as they are reported by the Board of Trade of that city. These for the first week after the reduction to 15 cents (ending June 25) were 72,988 tons, falling the next week to 55,864 tons, while last week they were but 44,371 tons—not at all large shipments. It should be said, however, that the Board of Trade reports do not include the whole shipments, and that those most likely to be omitted are the through shipments passing without change of cars from a road west to one east of the city. Now, it is precisely such shipments as these that the low rail rates tend to increase. They keep the grain from going to the Chicago elevators, where it would be sure to be reported. Further, last week contained the Fourth of July, when shipments are almost nothing.

Live stock is not included in the report of freight shipments, and it has never been pooled with the other freight. Live-stock rates are now regularly fixed on the basis of 25 cents per 100 lbs. from Chicago to New York, which is just half the regular rate of last year; but as the regular rate was not maintained last year, the loss on this enormous traffic is not so great, doubtless, as would appear from a comparison of the rates.

Though we cannot exactly measure the effect of the low rates on the different roads, we may get some idea of their effect by comparing their earnings during the months of 1879, when east-bound rates were most demoralized, with those of the corresponding months of 1880, when rates were well maintained. Freight traffic was heavy both years, but passenger traffic was much the better in 1880. Below we compare the gross earnings of several railroads with trunk-line traffic during the months from March to July, inclusive, when through east-bound rates were lowest in 1879, with the same five months in 1880, when they were well maintained. Navigation was open a month earlier in 1880 than 1879, which tended to decrease the amount of through traffic as well as the rates in 1880.

Gross earnings March to July, inclusive, 1879 and 1880.

	1880.	1879.	Increase.	P.c.
New York Central....	$13,694,951	$11.117,175	$2,577,776	23.2
N.Y.,Lake Erie & West	8,123,441	6,584,061	1,539,380	23.4
Lake Shore.....	7,617,496	5,719,365	1,898,131	33.2
Pennsylvania.....	16,855,587	13,115,500	3,740,087	28.5
Northern Central....	2,000,734	1,620,335	379,399	23.4
Cleve., Col., Cin. & Ind.	1,954,573	1,568,396	385,177	25.2
Wabash.....	4,835.933	3,144,685	1,691,248	53.6
Ind., Bloom. & West..	502,684	445,813	57,871	12.8
St. L., A.& Terre Haute	554,548	366,125	188,423	51.5

Now, compare the gains of these roads for these five months with those of the whole year, during five months of which rates were pretty well maintained both years:

	Five months. Amount.	P. c.	Year. Amount.	P. c.
New York Central.....	$2,577,776	23.2	$4,237,986	14.4
N. Y., Lake Erie & West....	1,539,380	23.4	2,980,246	18.1
Lake Shore.....	1,898,131	33.2	3,448,508	22.3
Pennsylvania.....	3,740,087	28.5	6,639,793	19 2
Northern Central.....	379.399	23.4	942,439	22.0
Cleve., Col., Cin. & Ind.....	385,177	25.2	795,767	17.6
Wabash.....	1,691,248	53.6	3,225.329	33.2
Ind., Bloom. & West.....	56,871	12.8	62,354	5.4
	$12,268,069	....	$22,332,422	....

Thus the larger part of the great gains of last year were made in the five months when through east-bound rates were lowest in 1879; and it must be said that a large part of the gain in the other seven months was owing to the maintenance of rates in January and February in 1880, which were badly cut then in 1879, though they were not so very low as in the following five months. These eight roads in the aggregate made average gains of $2,453,614 per month in the five months, and of only $1,437,765 per month in the rest of the year, though it was in the following months that there was the greatest increase of the traffic and especially of passenger traffic.

We cite this to show that it was very largely due to the fact that rates on through east-bound freight were higher in 1880 than in 1879 that was due the great gain of many railroads in 1880. We have before proved beyond cavil that on several most important roads the advance in rates caused the whole increase in profits in 1880; and in all cases in which the east-bound freight movement is reported separately, it appears that it was the advance on this alone that made the whole improvement This is not denying that there was a great improvement in local freight and passenger traffic: there was the greatest perhaps that there has ever been; but on roads of the class named above in every case in which their reports permit the investigation, the gains from these sources were wholly absorbed by the increase in expenses. There can be no question whatever but that the current demoralization of east-bound rates threatens grave disaster to a very large number of railroads; if it continues long it cannot result otherwise.

It is, we suppose, unlikely that it will last very long; but it will not stop itself, and every one who has at heart the financial reputation of the country and the continuance of the present period of prosperity should exert all his influence to bring about an early settlement. Last year July and August were extraordinarily profitable months for roads carrying trunk-line traffic. It is probably too late to save either of those months this year; but something may possibly be done for September, and at least for October. It may not be possible to make the fall business as profitable as last year, but should the traffic be lighter this year, which seems probable enough, the roads will need to make all they can out of it—get 30 cents if 35 is impossible, or 25 if the traffic will not move at 30.

There has been recently a good deal of talk about cutting west-bound rates out of New York. There has been some, affecting, we think, not a very large part of the business, done apparently without any pretext, and disowned by all the responsible parties. It is important chiefly as indicating some demoralization where there has been for four years almost continuous and uniform success in maintaining rates.

The public, however, seems to have been more impressed by an open cutting of through passenger rates from New York and Boston to the West than by all the freight troubles. This is, however, only an aggravation of a chronic trouble. Rates are always cut. Sometimes the railroad companies do not make any reductions on tickets sold to customers; but then they sell at a considerable reduction to a "scalper," who makes a smaller one to his customer, the passenger. Last week one of the roads began to sell to passengers (when they asked for it) at the same prices as to scalpers. The passenger gets a $21 Chicago ticket now for about $15; the scalper had been getting the tickets for that price for some time, and for a long timeat a discount of $3 or so. The tickets from Boston by way of New York to Western points seem to be at the bottom of the trouble, as often before. By way of Albany the distance from Boston to Chicago is only about 1,000 miles, against 960 from New York. Boston consequently claims a rate but one dollar higher than the rate from New York. But a ticket from Boston to New York costs $5, and if tickets are sold *via* New York, every passenger from Boston to New York by buying a ticket from Boston to Chicago on arriving at New York will have a ticket from New York to Chicago which will have cost him $16, the price of which is $20 in New York. If the passengers don't do this, the scalpers will. When New York is full of cheap Boston tickets, so that the regular New York offices find little market for their tickets, they are likely to bid against the scalpers, and then general demoralization ensues. Something of the same kind has been going on at Chicago for some time, and traveling in both directions is cheap now. It has seemed impossible to make the railroad managers pay any serious attention to the atrocious condition of through passenger traffic. They pretended to some months ago; but apparently went to sleep over it. Perhaps the thorough spoiling of this business for several months would wake them up again and induce them to do something If so, the few millions wasted would be well expended; but it seems a very costly spur, and ought not to be needed. The through passenger business, however, except on a few roads, yields but a small proportion of the passenger earnings; and the passenger earnings of most roads are but a third or fourth of the whole. It is a mistake, however, to suppose that the through

travel is unimportant. The increase in profits that may be had from it would be a very handsome addition to the income of any of the trunk lines and their immediate connections.

AUTHORITY OF RECEIVERS OVER OFFICERS.

"Two railroaders" have forwarded to the *Railroad Gazette* the following inquiry:

"Please inform us what officers can legally exist in a railroad company while said company is in the hands of a receiver; *i. e.*, can a receiver appoint his own officers in addition to those elected by the stockholders? State briefly the relations of the officers of a railroad company to a receiver."

1. In a strict sense it is not the company which passes into the hands of a receiver, but the property and franchises—the road and equipment, with the right to operate it and collect fares and freights. The company may continue to exist; its mere existence as a corporation is not necessarily affected, its organization is not changed. The theory of receivership is, that the company, having become insolvent, or having in some other way forfeited its rights, the court, for the protection of creditors, interferes to take the assets from the corporate custody, make sale of them, and apply the proceeds in proper proportions and order, as far as they will go, to the debts. The receiver is the instrument of the court in so doing. The appointment leaves the corporation "high and dry," as one may say—in full existence, but stripped of all that makes corporate existence desirable. Hence the answer to the first branch of the question is: All the officers of the company may continue to exist after the appointment of a receiver; they will have, however, no control over assets or business, but can represent the company only in defending suits, or in other matters arising while awaiting a final settlement of affairs.

2. The former view of a receiver's function was that he should, as soon as practicable, sell the property and make division. And in respect to most corporations this is all that is done. A receiver of a bank is not expected to keep open for receiving deposits or discounting paper; nor does a receiver of an insurance company receive applications, make surveys, issue policies and take premiums. No idea of carrying on the business, for the sake of sustaining the good-will until it can be sold, is recognized. In respect to railroads a practice has lately grown up of allowing a receiver to continue operating the road until a sale, or even to complete unfinished parts, etc. This was more fully explained in an article in the *Railroad Gazette* of July 8. In operating the road during the interim between his appointment and a sale he needs and is allowed the aid of the same sort of agents as the companies employ; conductors, engineers, brakemen, baggagemen, station masters, freight agents, ticket-sellers, and the like. Usually the receiver continues the satisfactory employés of the company in their posts, except so far as he sees opportunity to economize by consolidating duties. These persons are not, however, in a proper sense, "officers" of a railroad company, but are agents or employés of the directors. They are not elected by the stockholders; only the directors, and, in a few instances the president, are so elected. If the receiver continues the agents or employés of the board found needful for running the road in their posts for that purpose, they become his agents or employés. In so far as he wishes to make changes, he has power to do so freely, subject to the approval of the court by which he was appointed. An unjust or injudicious removal of employés may, we presume, be questioned upon a petition to the court, and in a clear case would be judicially disapproved and annulled. Therefore the answer to the second branch of the question is that a receiver has power to appoint agents and employés in operating the road, which he generally does by continuing those employed by the board, though he may make changes, subject to a veto by the court; but that he does not interfere with officers elected by the stockholders; these continue in office, with little or nothing to do.

3. The third branch of the question is partly answered by our article of July 8, which explains that the receiver is in general liable (officially, not personally) just as a company would be, for acts or neglects of the persons in charge of the road. On his taking possession these persons become subject to his orders, and to discharge by him. Suppose one holds a claim for arrears of wages. That is good against the company, and is to be paid out of the funds which the receiver may realize, if the amount suffices. Suppose one holds a contract engaging him for a term of years. That is broken by the company's going into receivership; it is a ground of action or claim against the company for damages; and the receiver will pay it with other claims. But it does not enable the claimant to retain his position under the receiver, against the will of the latter.

Quite lately a receiver was empowered as a means of raising money for the needs of his trust, to make and sell certificates of indebtedness. He made and signed one which he intrusted to an agent to sell; and the agent sold it but failed to account for the money. A purchaser of the certificate sought to enforce payment of it from the fund against which it was drawn; but the decision was against him on the ground that the receiver was not authorized to delegate the selling. The court said it was evident that the receiver of a railroad must act very largely through servants and agents in the ordinary business of the road; that he was in fact the superintendent and manager of the road, and the head of an army of employés whose duties were distinctly defined by usage and the necessities of the case. There could be no doubt of the power of a receiver to appoint these agents, and if his appointments are made in the exercise of a reasonable judgment and discretion, he will not be liable personally for their negligences or malfeasances. But his authority to raise money upon certificates stands upon a different footing. General authority as receiver does not give power to issue these certificates. This could only be done under the power conferred by a special order of the court. Their negotiation and sale, and the receipt of the moneys, were the important features of the transaction. The trust is a personal one which the receiver had no right to delegate to another. It involved, not merely the sale of the certificates upon the best possible terms, but the safe keeping of the moneys realized by such sale.

The judge said it was incredible that a court would permit an agent to be appointed for the negotiation of these certificates, and relieve the receiver to that extent, without at least requiring from such agent a bond for the faithful performance of his duties.

JUNE EARNINGS.

June earnings, as reported for 45 railroads, which worked 34,177 miles of road this year and 30,359 last, show an increase of 31¼ per cent. over last year; and their average earnings per mile increased from $467 to $547, or 17 per cent.—truly a large increase, considering that several of the companies have a very large mileage of new road. But in making these comparisons, we should bear in mind that circumstances have made June this year extraordinarily favorable for traffic. Last year the heavy spring traffic of Western roads was in May. The winter had been an open one, and it was possible for farmers to carry the produce to market at any time before spring opened, as well as afterwards. The spring was an unusually early one, and the farmers had their plowing and sowing done so early that they could give an unusually large part of May to marketing their surplus grain; and it was in May that the grain receipts o the Northwestern markets were largest. This year not only were all the Western roads much obstructed during the winter, but some lines were actually shut up until late in the spring, one at least not being open—no trains being run over a considerable part of it—until the 7th of May. Now the whole winter business of these lines remained to be done on the first of May—and a considerable part of the winter business on many other roads. But when spring opened on the 1st of May or thereabouts the whole time of the farmers was required for plowing and putting in crops, and this was true generally throughout May, so that they could do very little in that month in the way of marketing grain or getting lumber. The consequence has been that a very large part of the transportation which the farmer usually requires in the winter or spring, this year had to be done for him in June; and this has given an extraordinary traffic and earnings in that month to several railroads—mainly to those which had suffered most by the winter. A comparison of the June earnings of some of these roads with those of previous months in this year will illustrate. On the Burlington, Cedar Rapids & North western during the five months ending with May there had been an average decrease of $7,550 per month in total earnings, in June it had an *increase* of $52,534. The Chicago & Northwestern had the enormous increase of $565,468 in June, against an average *decrease* of $19,453 per month in the previous five months. The Chicago, Milwaukee & St. Paul (with a vast increase in mileage), had gained an average of $195,899 per month before June, while in June its increase was no less than $693,042. The Chicago, St. Paul, Minneapolis & Omaha, one of whose lines was buried for weeks together in the winter and spring, yet with its larger mileage had an average increase of $32,264 in the five months, in June increased $186,148—more than during the whole five months preceding. The Northern Pacific gained $115,171 in June against an average of $37,218 for the five months before. The St. Paul, Minneapolis & Manitoba had gained an average of $69,673, which became $161,915 in June. Nearly half of the entire June increase is on these roads which suffered from the snow blockades.

Thus a great amount of winter and spring business evidently has been forced into June, which was not the case last year, when the great month for traffic on the Northwestern and the St. Paul and such roads was May.

The very low rates on through east-bound freight began about the 17th of June, and must have greatly affected the business of several of the roads for the remaining two weeks of the month. They did not, however, immediately affect the gross earnings of all of them so much that we should expect to trace the result plainly. The first effect of the 15-cent rate was to increase greatly the shipments, especially from lake ports. While for some weeks the rail shipments from the seven Northwestern markets had been about 1,600,000 bushels of grain, in the first week of the low rates they were nearly 3,600,000 bushels, and in the second more than 2,500,000. The first effect is likely to be greatest, but *for June* it is probable that for some lines, such as those from Chicago eastward, the gross receipts after the reduction were as great as before. The roads suffering most from the reduction are probably those south of Chicago and the lakes, which have not been able to divert traffic from the lake vessels and have thus had but a moderate increase of traffic following the reduction in rates—such roads as the Wabash east of the Mississippi, the Vandalia line and other roads from St. Louis eastward, etc. Of this class, there report for June, the Indiana, Bloomington & Western, which shows a decrease of about 6 per cent., the Cleveland, Columbus, Cincinnati & Indianapolis, which gained 11¼ per cent., and the main line of the St. Louis, Alton & Terre Haute, which gained 9.7 per cent.

The July traffic of such roads it will be interesting to observe. Those pretty well to the south, such as those from St. Louis to the East, have for some years had a very fine July traffic, the new winter wheat coming forward rapidly then. To have rates spoiled just as this traffic is about to begin is somewhat exasperating. The prospect being that the crop will be lighter than for a few years past and that the demand for it will not be urgent makes it at least possible that these roads may have a lighter traffic as well as lower rates this July. Unfortunately most of the roads which carry this traffic do not report, or, like the Pan-handle, report with a vast system of other lines. The harvest is later than usual, and this alone may somewhat reduce the July traffic of such roads.

The Disappearance of the 5 ft. Gauge.

The 5 ft. gauge seems doomed to disappear. Not long ago it seemed probable that it might remain for many years to come the standard gauge of the country south of the Ohio and east of the Mississippi. There was a very little road of 4 ft. 8½ in. gauge in Kentucky, but Louisville was the boundary between the two gauges. The use of car-hoists had made the need of a uniform gauge less pressing than it used to be, especially as the business interchanged between the Northern and the Southern roads was comparatively light. The danger to the 5 ft. gauge seemed to be in the eastern part of its territory, in Virginia and North Carolina, where the two are still intermingled, with, perhaps, a preponderance of the standard. And it is an extension of the Virginia 5 standard, gauge roads that has now begun the transformation in Kentucky. The Chesapeake & Ohio extension (Lexington & Big Sandy) is to have a Cincinnati connection through the Kentucky Central, and on this account the gauge of the latter was changed from 5 ft. to the standard last Sunday. The Chesapeake & Ohio will doubtless get more traffic from Ohio than from Kentucky, and especially more from Ohio railroads than from Kentucky railroads, and for through traffic in such staples as grain and provisions uniformity of gauge is almost indispensable. But with a standard gauge road giving Kentucky its shortest outlet to the sea, it will be desirable that all its roads should be able to interchange cars with it. The next change is to be of the Illinois Central's long line from Cairo to New Orleans, across Kentucky, Tennessee and Mississippi—the first line east of the Mississippi—which will carry with it the change of the 100-mile branch from Memphis to Grenada. Then the territory of the 5 ft. gauge will be invaded on all except the ocean sides; the Texas & Pacific and the Iron Mountain bringing traffic to the Mississippi at Vicksburg, Memphis and Belmont

will give a reason for the change of the Vicksburg & Meridian, the Memphis & Charleston, the Nashville & Chattanooga and the Mobile & Ohio. The Louisville & Nashville has already contemplated a change, though its system perhaps suffers less from lack of uniformity with the standard gauge than almost any other in the South. But now that the beginning is made we need not be surprised if it makes rapid progress. It will not be nearly so costly as the change from 6 ft. to the standard on some Northern roads, partly because the change of 3½ in. can be made on cars with less cost than the change of 15½ in., and can even be made on locomotives, and partly because the Southern roads have comparatively a very light equipment. For example, the Southern roads south of the Potomac and east of the Mississippi have nearly the same mileage as those of the Middle States; but by the last reports they had not one-third as many locomotives, about one-fourth as many passenger cars, and not *one-eighth* as many freight cars. Or putting it differently, per 100 miles of road there were in the two sections:

	Locomotives.	Passenger cars.	Freight cars.
Middle states	40.2	33.3	1,625.3
Southern states	13.4	8.8	193.2

Evidently the question of changing the gauge 500 miles of road with 67 locomotives and 1,010 cars is much less serious than on a road having 201 locomotives 8,293 cars. The Kentucky Central has (or had recently) 19 locomotives and 399 cars of all kinds; the Chicago, St. Louis & New Orleans, 100 locomotives and 1,792 cars (with 572 miles of road). Now the Erie had, before its gauge was changed, 475 locomotives and 12,063 cars, with 928 miles of road. Probably all purchases of rolling stock for Southern roads hereafter will be made with regard to a possible future change of gauge; that is, they will be so constructed that they can be quickly and cheaply changed. There will be some regret at giving up the extra width of fire-box which the 5 ft. gauge permits; but with the lighter trains and engines common in the South and sufficient for most Southern roads, this is less important than on the average Northern road.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Grinnell & Montezuma.—Extended from Newburg, Ia., to State Centre, 28 miles. Part of the track was laid last winter.

St. Louis, Ft. Scott & Wichita.—Extended west to Iola, Kan., 33 miles.

Nantucket.—Track laid from Nantucket, Mass., to Surf Side, 3 miles. Gauge, 3 feet.

Utah & Northern.—Extended from Dillon, Mon., northward to Melrose, 30 miles. Gauge, 3 feet.

New Orleans Pacific.—Extended southeast to Gloster, La., 17 miles.

Carson & Colorado.—Extended southward to Hawthorne, Nev., 12 miles.

Mississippi Valley & Ship Island.—Extended from Goodrum, Miss., southward to Big Black, 7 miles. Gauge, 3 feet.

Old Orchard Junction.—Completed from the Eastern Railroad near Scarborough, Me., to Old Orchard Beach, 3 miles.

New Haven & Northampton.—The *Turner's Falls Branch* is extended north by east to Turner's Falls, Mass., 4 miles, completing it.

This is a total of 137 miles of new railroad, making 2,418 miles this year, against 2,228 miles reported at the corresponding time in 1880, 1,035 miles in 1879, 791 miles in 1878, 710 miles in 1877, 846 miles in 1876, 457 miles in 1875, 727 miles in 1874 and 1,578 miles in 1873.

GRAIN EXPORTS for the first half of the year are reported elsewhere for New York, Boston, Philadelphia and Baltimore. On the whole there has been a large decrease from the exports of last year. Taking flour, wheat and corn together, this decrease is from 105,378,324 to 88,174,814 bushels, or 16¼ per cent. The decrease is largest (37.7 per cent.) in corn, which has been wanted at home; in wheat the decrease was more moderate (8.2 per cent.), and against this we must reckon the enormous increase of 48.4 per cent. in flour exports. This increase in flour exports was indeed equivalent to 5,462,455 bushels of wheat, while the decrease in wheat was but 3,543,561 bushels. The decrease in wheat and the increase in flour were both chiefly at New York, but here the increase of flour, though 64 per cent., was not equivalent to the decrease in wheat. Philadelphia shows an increase of nearly 37 per cent. and Baltimore of 10½ per cent. in wheat exports; but Philadelphia has the enormous decrease of 8,450,000 bushels—more than two-thirds—in corn exports, which makes its aggregate exports of flour, wheat and corn nearly 42 per cent. less than last year, against a decrease of 20 per cent. at Boston, 11½ at New York and 7½ at Baltimore—which thus has suffered less in comparison than any of the others. Of the total exports the percentages of the total from each place this year and last were:

	New York.	Boston.	Philadelphia.	Baltimore.
1881	56.5	9.7	11.0	22.8
1880	53.4	10.2	15.8	20.6

New York and Baltimore have gained considerably in position, chiefly at the expense of Philadelphia, though Boston has lost a little.

Of the whole enormous gain in flour exports, New York had 86⅛ per cent. and Boston 11⅜, leaving but about 2 per cent. of the increase at Philadelphia and Baltimore, whose flour exports are really insignificant, and have profited very little by the tremendous increase in flour manufacture and export that has taken place during the past year. New York this year exported 72 per cent. of the flour, 55 per cent. of the wheat and 50⅛ per cent. of the corn going from these four ports. Baltimore, which shipped 27 per cent. of the wheat and 25⅛ per cent. of the corn, exported 7 per cent. of the flour. On the whole, as we have seen, New York has had a larger share of the smaller exports than last year, and the tendency to ship a larger part of the breadstuffs than formerly in the shape of flour profits New York and Boston almost solely, and New York chiefly.

CANAL SHIPMENTS (including everything from all places on all the New York canals) were 181,231 tons during the week ending July 7 this year, against 211,523 last year, the decrease being 14¼ per cent. In grain alone there is a decrease from 77,961 to 41,023 tons—more than 40 per cent.; but there is an increase from 37,845 to 55,951 tons in lumber. These two items made up more than half the total canal tonnage both years. Of iron and iron ore the shipments were 17,932 tons this year against 20,520 last year; and of coal 38,494 tons this year against 40,005 last. The mileage of boats cleared fell from 362,350 to 232,848—more than one-third; and the tolls from $38,739 to $24,351—about three-eighths. Rail rates, we believe, are maintained on lumber (the shipments of which are made almost entirely from points east of Lake Michigan), and this probably enables the canal boats to get comparatively better rates on lumber than on grain. The shipments of dry goods and groceries, which are mainly railroad freights, were 2,391 tons this year, against 1,374 last. These form an insignificant part of the canal shipments, but are not an insignificant part of the railroad shipments from New York city.

The canal shipments of grain, however, are now considerably larger than immediately after the low rail rates were made. During the last week of June they averaged less than 145,000 bushels daily; but for a week past they have averaged 220,500 bushels daily, against 330,000 by rail. Before the low rates were made they had averaged about 256,000 bushels daily against 253,000 by rail. During the past week the receipts at New York have been about 144,000 daily by canal and 320,000 by rail.

WATER RATES have changed but little during the past week, except on the ocean, where there has been an advance from 3⅜d. per bushel from New York by steam to Liverpool to "4¼d. bid and 5d." asked. The advance in ocean rates since rail rates were reduced is now just about equal to the reduction in the lake and canal rates, so that it costs just about as much now to get a bushel of grain from Chicago to Liverpool as it did when the rail rate was 25 and 30 cents. Lake rates fell about a quarter of a cent; and late quotations are 3¼ cents a bushel for corn from Chicago to Buffalo, and the same for wheat from Milwaukee. On the other hand canal rates have advanced a quarter of a cent, to 3¾ cents a bushel for corn and 4¼ for wheat from Buffalo to New York. The charge for elevating at Buffalo for some time past has been ¼ cent but has just been reduced to ⅛ cent. The change of a quarter cent from the lake to the canal rate makes a more equitable division. The lake vessels can still probably make good profits, and the canal boats wanted at least another quarter of a cent to pay expenses. They are the greatest sufferers from a railroad war, which, whatever may be said to the contrary, probably had not the slightest reference to canal competition, which it will be hardly possible for the railroads to prevent permanently, and which, we are strongly inclined to think, for the New York railroads is, in the long run, a benefit and not an injury.

The Safety of Brakemen—Position of Brake-Shafts and Ladders.

The following report was presented to the Master Car-Builders' Association, at the late convention in New York, by the Committee on Position of Brake-Shafts and Ladders on Freight Cars:

Your Committee appointed at the last annual meeting of the Master Car-Builders' Association to issue a circular to railway managers, superintendents, master mechanics and master car-builders upon the "Position of Brake-Shafts and Ladders on Freight Cars"—

Report, that in December last we mailed to railway managers, superintendents, master mechanics and master car-builders, and to all private car shops 1,000 of the following circulars.

To the Managers, Superintendents, Master Mechanics, and Master Car-Builders of Railroads:

The attention of the Master Car-Builders' Association was called, a few years ago, to the fact that the brake-shafts were not placed on the same side on all freight cars. The consequence is that when two cars having them on opposite sides are brought together to be coupled, the brake-wheels are liable to come in contact with each other and be broken, or else must be removed, which consumes time, and it then often happens that in replacing them they are insecurely fastened, and *many accidents* have happened and *lives been lost* by the wheels becoming detached while train-men were applying the brakes. Injuries to men also occur when the brake-wheels on two cars adjoining each other are on opposite sides of the cars, and which therefore come near or in contact with each other and thus crush the hands of the men.

For these reasons the Car-Builders' Association, after fully discussing the subject a few years ago, adopted a resolution, recommending that brake-shafts should always be placed on what is *the left-hand side of the centre of the car*, to a person standing on the track facing the end of the car, as indicated by the engraving herewith, and placing the brake-shaft as near as possible in a straight line with the top end of the lever, so that the top connecting-rod and the chain may pull in a straight line from top of lever and the brake-shaft.

The reason for placing the brake-shafts in this position rather than on the opposite side is, that in case of any of the brake attachments giving way, when a person is exerting his strength in applying the brakes, the effort of doing so would, in case the shaft is on the left side throw him toward the roof of the car instead of away from it.

The main object to accomplish, though, is *uniformity*, and it is believed that there are now more cars in the country with the brake-shafts in the position recommended than in the opposite one.

Since the resolution referred to was passed, some companies have changed the position of their brake-shafts, and very generally its recommendations have been followed in the construction of new cars.

The object of this circular is to call your attention to the subject, and if you have not already done so, to try to induce you to adopt the recommendation of the Master Car-Builders' Association, and to venture to express the opinion that doing so will be the means of *saving the lives and limbs* of the men you employ, and it will *protect the property of your company from injury.*

In order to enable the Committee to know to what extent the recommendation of the Association has been adopted, will you oblige them by filling up the inclosed circular and forwarding it to the Chairman, and also state whether you consider the side or the end of a freight car the best position for the ladder, and your reason for your preference.

C. A. SMITH, No. 113 Liberty street, New York.
C. E. GARY, Master Car-Builder of the New York & Harlem Railroad, Morrisania, N. Y.
J. N. MILEHAM, Master Car-Builder New York, Lake Erie & Western Railroad, Jersey City, N. J.

....1881.

Name of road.....
Number of cars, approximately, with brake-shaft on left-hand side.....
Number of cars, approximately, with brake-shaft on right-hand side.....
I consider the ..... as the best position for freight-car ladders, for the following reasons:

We asked them to fill up the blank and return to us. In answer to these about 100 roads promptly returned the blank filled up. The Committee were gratified to find that presidents, vice-presidents, managers and superintendents took an interest in this matter.

In some cases they wrote upon the blanks to their master car-builder or master mechanic as follows:

"Fill up this blank and return to my office."

From the replies received your Committee cannot say how many cars, approximately, there are on the roads that answered the circular, that have the shafts on either the left or right hand corner of the end of the car; but we can say there are, comparatively speaking, very few cars with brake-shafts on the right hand corner of the end of the car. Some roads say they are changing them from the right to the left hand corner, when cars are in for repairs.

Most of the replies, and many of them from large roads, reply in this manner: "All on left hand corner," without giving the number of cars. Others answer, "most all on left hand corner, a few on right hand corner."

Roads report as follows:

5,000	cars with shafts on	left hand	corner—none on	right.
4,000	"	"	"	"
2,000	"	"	"	"
7,000	"	"	"	"
2,000	"	"	"	"
13,000	"	"	"	"
1,000	"	"	"	"
5,500	"	"	"	"
2,000	"	"	"	"
2,000	"	"	"	"
16,452	"	"	"	"
1,000	"	"	"	"
1,500	"	"	"	"
12,000	"	"	"	"
1,000	"	"	"	"
6,200	"	"	"	"
3,000	"	"	"	"
27,114	"	"	"	"
1,000	"	"	"	"
3,000	"	"	"	"
6,067	"	"	"	"
2,000	"	"	"	"
10,000	"	"	"	"
1,000	"	"	"	"
6,200	"	"	"	"
22,000	"	"	"	"
2,098	"	"	"	"
17,000	"	"	"	"

And about 300 on right hand side.

Here are over 200,000 cars on roads that report them all in the proper position.

Your Committee judge there is double this number of cars with shafts in same position on roads that report "all on left hand corner of car," without giving the number of cars.

68 roads report all brake-shafts on left hand corner of end of car.

7 roads report about all brake-shafts on left hand corner of end of car.

2 roads report all brake-shafts on right hand corner of end of car.

Your Committee are of the opinion that sufficient prominence has been given this *Position of Brake-Shafts* to induce all railroad companies except those having them all on the right hand corner (and possibly some of these) to accept the recommendation of our Association, and hereafter place them on the left hand corner of the car as you stand facing the end of the car.

Your Committee also report, that in replies to inquiries as to the best position for freight car ladders; that 43 roads considered the left hand corner next to brake-shaft as the best position; 29 roads considered the side of the car next to brake-shaft as the best position; 7 roads considered the right hand corner opposite brake-shaft as the best position; 3 roads considered that ladders should be placed both on side and end of cars; a few roads say anywhere for sake of uniformity.

Those favoring the end of car, think it is safer for trainmen, as they are out of the way of passing trains, bridges, etc.

Those favoring the side of cars think it safer, in case a train-man falls from the ladder he will fall outside the rails.

In these replies many suggest that a handle be placed across the end of the car, for brakemen to grasp while coupling or uncoupling cars.

In conclusion, your Committee would recommend, for the protection of train-men, that handles be placed horizontally across both ends of all freight cars for the train-men to grasp while coupling or uncoupling cars.

Also that particular care be taken to firmly secure the ladder and ladder rounds to the car.

C. A. SMITH.
J. H. MILEHAM.
C. E. GAREY.
Committee.

DISCUSSION.

Mr. ADAMS said that formerly most New England roads

had the brake-shafts on the right-hand corner, but since this question was before the Association three years ago a great many had been changed.

Mr. SMITH said that in traveling he had noticed the use of the ladders and had questioned conductors. They almost invariably preferred the ladder on the side of the car. Where there were some cars with side ladders and some with end ladders the men always went for the cars with side ladders.

Mr. KOHLER put the ladders on the end and put two handles right over the step at the side.

Mr. ADAMS thought the side ladders were unsafe on account of passing trains and bridges. The men preferred the side ladders because they could take hold of the steps. An end ladder was much safer if there were handles at the side of the car to take hold of. They had had men killed with the side ladders. In regard to the handles it was very necessary to have them securely fastened. They frequently gave way and caused accidents. In relation to a matter that had been referred to in convention, of having the running boards project so as to lessen the distance between the cars, he had noticed that where it was done the brackets under the projecting boards were not securely fastened, and they had had men killed by the boards giving way and throwing them down between the cars.

Mr. KIRBY thought it was necessary to have the running boards project. If they were not properly fastened that was bad workmanship, it did not affect the idea.

Mr. COULTER believed in having the ladders close to the brake-shafts, and thought that there should be a uniform position for the handles on the side of the car, so that brakemen would know just where to look for them. He suggested the circulation of a sketch showing proper position of the step and handles.

Mr. SMITH thought that with the handles on the side there was just as much danger as if the whole ladder were there. He had not believed in side ladders himself until he had watched and talked with the brakemen.

Mr. ADAMS said they had adopted end ladders because they had had men killed by the side ladders. They had also had accidents to brakemen on account of the brake-wheels giving way. He had seen a device which obviated all that, a lever brake with a ratchet. The lever laid down flat out of the way when not in use. It was much safer and more convenient than anything he had ever seen, and he believed they ought to recommend it. It was a patented device.

Mr. DAVENPORT referred to the pressure for positions as brakemen, in spite of the danger. An improvement on some cars was the placing of the dog on the brake-shaft so that the brakeman must stand where, if the wheel gave way, he would fall on instead of off the car. It was very much better to have the brake so that the man could stand on top of the car and set it, and not be obliged to get down on a step.

Mr. ADAMS thought that when the ratchet was on top of the car the brakeman had to bend down too far, or else the wheel was too high above the top of the car. This made trouble, especially with grain cars which had to go into elevators. The lever brakes were much more simple and could be applied much quicker than a wheel brake. The one he mentioned he knew to be very good and it ought to be recommended.

Mr. KIRBY had tried setting the brake back from the end of the car, making connections by a rod and chain. The trouble had been that the brake-staff was too short, there was no give to it.

Mr. GAREY said they had some brakes with an automatic pawl, which did not require the brakeman to use his foot. As to brake-shafts he thought that they lost strength when made too long.

Mr. VERBRYCK said that he had tried a lever brake and had much trouble with it. It would get slack and not put on the brake hard enough. In winter, too, when rain and ice got in it there was trouble.

Mr. ADAMS said that nothing was perfect. They ought to get the best thing they could find. The lever brake worked very quickly, and the slack could be taken up with very little trouble—for instance, by a hook and a few long links in the chain. The brakeman did not have to put his foot on the ratchet and wind up the chain; he had simply to put his foot on the treadle and it was done.

Mr. C. E. GAREY agreed that this lever brake was much safer for the brakeman. If a chain should give way he had simply to hold on to the lever and he was safe and could not be thrown off the car. He could graduate the strain on the lever also as he wanted it.

Mr. MARDEN thought that damage might result to the brakemen if the brake-step was on some cars and not on others. They naturally looked for that step and at night could not see which cars were without it.

Mr. ADAMS said he would like to move that the Convention approve of this Johnson lever brake and recommended it to the attention of companies.

Mr. DAVENPORT asked what patent fee would be charged on this brake. This was an important question.

Mr. COULTER thought it would not do to recommend a thing without knowing what it would cost. A statement of the cost or royalty should accompany any presentation of a patented article.

Mr. MARDEN thought the lever brake a good thing, but believed it would be well to leave it to a committee for more careful inquiry.

Mr. ORTON thought they were hardly prepared to adopt a patented article like that. It would be sufficient to give it favorable mention.

Mr. ADAMS said his resolution was simply one of approval. He did not think the royalty would be very large.

Mr. HILDRUP thought they should be careful. They might simply say that the brake had valuable features.

Mr. DAVENPORT moved that no mention be made of patented articles unless the amount of royalty be distinctly stated.

This motion was ruled out of order.

The PRESIDENT thought they ought to be very careful. A recommendation of theirs might be used in court in a suit for damages. The matter ought to be referred to a committee.

Mr. MCKENZIE thought that a life-saving device ought to be recommended. As to the legal question, their recommendation could be used as much to protect the companies as against them.

Mr. HILDRUP thought that improvements ought to be recommended regardless of price. He offered a resolution recognizing valuable features in Johnson's lever brake.

Mr. ADAMS accepted it as an amendment to his own motion. He thought they could be too cautious and fail to recognize valuable improvements because they were afraid. They would really injure their companies more by failing to take action.

Mr. MARDEN believed it should be referred to a committee.

Mr. SMITH did not believe in recommending patented articles, and thought that too much time had been given to the patent question.

Mr. BISSELL thought that the exclusion of patented articles would shut out all improvements. They ought not to be afraid to discuss them.

Finally a resolution was adopted continuing the Committee and referring to it the question of approving the Johnson lever brake.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Cleveland, Columbus, Cincinnati & Indianapolis, special meeting, in Cleveland, O., Sept. 1, to vote on the agreement of consolidation with the Cincinnati, Hamilton & Dayton Company.

Technical Conventions.

The *American Society of Mechanical Engineers* will hold the midsummer meeting at Altoona, Pa., on the 10th, 11th and 12th of August. The place is well chosen, for no more delightful spot in which to pass three hot days could be found than the summit of the Alleghenies, where there are excellent accommodations, and much of professional interest attaches to the extensive shops of the Pennsylvania Railroad. The Cambria Iron & Steel Company's works will also be visited.

Dividends.

Dividends have been declared as follows:

Cheshire, 1½ per cent., semi-annual, on the preferred stock, payable July 20.

Central Pacific, 3 per cent., semi-annual, payable Aug. 1.

St. Paul, Minneapolis & Manitoba, 3 per cent., payable Aug. 1. Transfer books close July 20. This is the first dividend.

Foreclosure Sales.

The *Bingham Cañon & Camp Floyd* road has been sold by order of the trustees and bought for $300,000 by C. F. Woerishoffer, who is understood to be acting for the Denver & Rio Grande Company. The road extends from Bingham Junction on the Utah Southern road, to Bingham, Utah, 15 miles.

Mail Service Extensions.

Mail service has been ordered over the *Elizabeth City & Norfolk* road, from Norfolk, Va., to Elizabeth City, N. C., 46 miles, from July 15.

Southwestern Railway Association.

A dispatch from Chicago, July 13, says: "The committee, composed of the managers of the several roads forming the Southwestern Railroad Pool, appointed at the meeting of June 14, to prepare and submit a plan for a settlement of difficulties and for the reorganization of the pool, met here to-day, John B. Carson, of the Hannibal & St. Joseph Railway, in the chair. A proposition was submitted on the part of the Chicago, Rock Island & Pacific Railroad to settle the affairs of the Southwestern Railway Association for the future by the appointment of a commission consisting of Commissioner Midgley and two others to be agreed upon, which shall decide all questions as to business that shall be included in the association, and all questions as to divisions and percentages under the single condition precedent—that all business between any two given points shall be treated precisely alike by whatever route carried. Objection was made on the part of the Wabash road to some of the points in this proposition, and after a short discussion the meeting was adjourned until to-morrow, when the proposition will be voted upon as a whole."

ELECTIONS AND APPOINTMENTS.

Albert.—This company has been reorganized with the following officers: President, R. F. Clinch; Manager, George A. Robinson, Hillsboro, N. B.; Secretary, A. Ray, St. John, N. B.

Baltimore, Cincinnati & Western.—This company has elected Hon. Richard W. Thompson President. Mr. Thompson was recently Secretary of the Navy, and was formerly Counsel of the Terre Haute & Indianapolis Company.

Baltimore & Ohio.—The following circular from President Garrett is dated Baltimore, July 5:

"Mr. Bradford Dunham has this day been appointed General Manager of the Trans-Ohio divisions, embracing the Central Ohio, Lake Erie, Straitsville and Chicago divisions, with headquarters at Newark, Ohio."

Mr. Dunham was for several years in charge of the Montgomery & Eufaula road, and was afterward Superintendent of the South & North Alabama Division of the Louisville & Nashville. The last-named position he resigned in March last.

At a meeting of the board held July 13 Robert Garrett was chosen First Vice-President in place of John King, Jr., and Samuel Spencer Third Vice-President in place of Mr. Garrett. The office of Second Vice-President, vacated by Wm. Keyser, was not filled.

Mr. Spencer has been for some time Assistant to the President.

Baltimore, Pittsburgh & Chicago.—The officers of this consolidated company are: President, James S. Negley, Pittsburgh, Pa.; Vice-President, Delos E. Culver, Jersey City, N. J.; directors, H. E. Collins, Wm. N. Riddle, Pittsburgh, Pa.; J. S. Robinson, Kenton, O.; I. S. Mansfield, L. Scott, Cannelton, O.; F. W. Lockwood, Cleveland, O.; John R. McPherson, Metuchen, N. J.; W. A. Cole, Henry Day, Charles Siedler, Jersey City, N. J.; Walter S. Gurnee, New York; Secretary, James S. Negley, Jr., Pittsburgh, Pa.; Treasurer, Wm. N. Riddle, Pittsburgh.

Belfast & Moosehead Lake.—This company has elected officers as follows: President, Charles B. Hazeltine; Clerk, John S. Kimball; Treasurer, Thomas A. Faunce. The road is leased to the Maine Central Company.

Cincinnati & Eastern.—At the annual meeting in Batavia, O., recently, the following directors were chosen: J. H. Crissman, J. P. Duckwall, O. H. Hardin, M. Jamieson, W. R. McGill, Wm. Mansfield, J. Marshall, J. M. Neely, F. M. Smith, N. R. Thompson, J. H. Wilbur, S. Woodward. The board elected W. R. McGill President; Wm. Mansfield, Secretary and Auditor; M. Jamieson, Treasurer; J. H. Wilbur, Superintendent; W. W. Young, Chief Engineer.

Eau Claire.—This company has elected O. H. Ingram President; L. E. Latimer, Secretary and Treasurer. The road is leased to the Chicago, St. Paul, Minneapolis & Omaha Company.

Ft. Worth & Rio Grande.—The officers of this new company are: President, J. P. Smith; Vice-President, J. H. Brown; Directors, H. J. Boaz, N. N. Brunswig, W. H. Davis, W. F. Lake, S. W. Lomax, Sidney Martin, T. A. Tidball; Secretary and Treasurer, S. W. Lomax. Office at Ft. Worth, Texas.

Franklin & Clearfield.—The officers of this new company are: President, Thomas E. Shoemaker; directors, Charles D. Barney, Walter Clark, Robert M. Janney, Wm. F. Hirons, E. S. McConanghy, E. J. Price, B. F. Stratton, John J. Summers, all of Philadelphia.

Hartford & Connecticut Western.—The new directors have chosen Wm. L. Gilbert President; C. T. Hillyer, Vice-President; E. R. Beardsley, Secretary and Treasurer; L. B. Merriam, Joseph Toy, E. T. Butler, Executive Committee; John F. Jones, Superintendent and General Freight Agent; Walter Pearce, General Passenger Agent.

Hudson Tunnel Railroad.—Gen. Wm. Sooy Smith has been appointed Chief Engineer.

Indianapolis & Evansville.—At the annual meeting in Evansville, July 5, the following directors were chosen: Charles Viele, Samuel Vickery, John H. Roelker, J. J. Kleiner, R. G. Hervey, W. E. French, Dr. M. Muhlhausen, John J. Morton, Evansville, Ind.; John C. New, Indianapolis. The board elected R. G. Hervey President; John J. Kleiner, Secretary; John J. Morton, Treasurer.

International & Great Northern.—The following circular from General Manager H. M. Hoxie is dated Palestine, Tex., July 1, 1881:

"Commencing July 1, 1881, the following officers are designated, to whom you will make reports and remittances at the office of the Missouri Pacific Railway Company, St. Louis, Mo.

"Mr. C. G. Warner, Auditor, will have charge of accounts, and all reports pertaining to freight and ticket business will be made to him on such forms and in such manner as he may direct.

"Remittances will be made to Mr. James T. Birch, Cashier.

"All reports and remittances account of business prior to July 1, will be settled by the present officers, as per instructions now in force.

"With the exception of accounts and remittances, all business will be in charge of existing officers, who will be addressed as heretofore."

Massachusetts Central.—Mr. E. G. Allen has been appointed Superintendent. He has been for several years connected with the Boston, Revere Beach & Lynn.

Metropolitan Elevated.—At the annual meeting in New York last week the following directors were chosen: Jay Gould, Russell Sage, Sidney Dillon, William R. Garrison, Jose F. Navarro, Sylvester H. Kneeland, Joseph S. Stout, G. M. Dodge, Horace Porter, Washington E. Conner and Samuel Sloan. Of this number only Messrs. Garrison, Navarro and Porter were members of the old board. The board elected Russell Sage President; Sylvester H. Kneeland, Vice-President.

Mobile & Alabama Grand Trunk.—At the annual meeting in Mobile, Ala., recently, the following directors were chosen: George Arents, D. P. Bester, Francis Blelock, T. G. Bush, Thomas Henry, T. P. Miller, D. T. Parker, Wm. H. Pratt, J. W. Whiting. The board elected T. G. Bush President; Wm. H. Pratt, Vice-President; M. T. Taylor, Secretary and Treasurer.

Mobile & Girard.—At the annual meeting held July 6 the old directors were re-elected, as follows: J. D. Murphree, Troy, Ala.; N. P. Banks, Guerryton, Ala.; L. T. Downing, John P. Manley, R. L. Mott, John Peabody, Columbus, Ga.; Wm. M. Wadley, Savannah, Ga. The board re-elected Wm. M. Wadley President; W. L. Clark, Superintendent; J. M. Frazer, Secretary and Treasurer.

Nantucket.—The officers of this company are: President, Jonathan Dorr; Clerk, A. Cottrell; Treasurer, John H. Norton; Superintendent, Philip H. Folger.

Ogdensburg & Lake Champlain.—Mr. F. L. Pomeroy has been appointed General Freight and Passenger Agent of this company. All communications in regard to these departments should be addressed to him at Ogdensburg, N. Y.

Old Colony Railroad Mutual Relief Association.—This association elected the following officers at its annual meeting in Boston last week: President, C. F. Hammond; Vice-President, W. B. Fisher; Treasurer, C. F. Russell; Secretary, A. W. Sawin; Financial Secretary, R. E. Darrah; trustees, one year, S. C. Putnam; two years, J. C. Sanborn; three years, G. W. Wilde.

Owensboro & Nashville.—The officers of this company (which is now working its road, lately operated by the Louisville & Nashville) are: President, Col. R. S. Bevier, Russellville, Ky.; Secretary, A. M. Quarrier, Louisville, Ky.; General Superintendent and General Passenger and Freight Agent, W. L. Gude, Owensboro, Ky.; Auditor and Treasurer, H. C. Gans, Owensboro, Ky.

Palestine.—The officers of this company are: President, Alexander McDonald, Boston; Vice-President, N. J. Nichols, Worcester, Mass.; Secretary, George W. Hamilton, Boston; Treasurer, Rev. Joseph Williams, Boston.

Panama.—At a meeting of the board held last week, Messrs. John W. Ellis, Egisto P. Fabbri, F. J. de Sala, Jesse Seligman and Richard W. Thompson were chosen directors in place of George A. Hoyt, Charles D. Leverich, Christopher Meyer and Samuel C. Thompson, resigned, and John R. Marshall, deceased. The new directors represent the De Lesseps Panama Canal Company.

Philadelphia, Wilmington & Baltimore.—In Philadelphia, July 13, Messrs. George B. Roberts, Edmund Smith, A. J. Cassatt, J. N. Du Barry, John P. Green, Henry M. Phillips and Wistar Morris were chosen directors in place of Nathaniel Thayer, Wm. Minot, Enoch Pratt, J. Whitridge, George G. Haven, Robert Garrett and J. Bowditch, resigned. The new directors represent the Pennsylvania interest.

The board elected A. J. Cassatt Vice-President, a new office. No other changes were made.

Sabine Pass & Texas Northern.—This new company has elected officers as follows: President, H. McK. Twombly, New York; Vice-President, C. M. Raquet, Marshall, Texas.

Spuyten Duyvil & Port Morris.—At the annual meeting in New York, July 12, the following directors were chosen: William H. Vanderbilt, Cornelius Vanderbilt, William K. Vanderbilt, Frederick W. Vanderbilt, Chauncey M. Depew, Augustus Schell, A. B. Baylis, J. B. Dutcher, R. J. Niven, Joseph Harker, William H. Leonard, S. F. Barger, J. E. Burrill. The road is leased to the New York Central & Hudson River.

State Line.—The directors of this new company are: John L. Beveridge, David B. Dewey, Eugene Ellery, Robert Kendall, A. Schraeder. Office at Peoria, Ill.

Texas & Pacific.—General Freight Agent W. H. Newman is appointed General Passenger Agent also, in place of R. W. Thompson, Jr., resigned.

Mr. A. B. Ellison has been appointed Train Dispatcher of the Jefferson and Shreveport divisions.

Toledo, Delphos & Burlington.—The following appointments and changes are made, to take effect July 5: Mr. J. W. McElvaine is appointed Paymaster and Fuel Agent; Mr. F. Sprague is appointed Auditor. Offices at Toledo, Ohio.

Union, of Illinois.—At a meeting of this old company in Chicago, last week, the following directors were chosen: Cornelius Vanderbilt, E. D. Worcester, Ashley Pond, G. V

N. Lathrop, H. B. Ledyard, A. L. Osborne, H. C. Wentworth, J. A. Grier, Samuel Powell, Alexander Mackay, F. I. Whitney, W. R. Busenbark, E. C. Wentworth. The road is the Michigan Central line into Chicago.

Wisconsin & Michigan.—The officers of this company are: President, Jesse Hoyt; Vice-President, James C. Spencer; Directors, Ephraim Marriner, Guido Pfister, Angus Smith, Frederick Vogel, Jr.; Secretary and Treasurer, E. Marriner. Office in Milwaukee, Wis.

PERSONAL.

—It is reported that Mr. F. L. Parker will shortly resign his position as Traffic Manager of the Fitchburg Railroad, and that he will go back to the Atchison, Topeka & Santa Fe as Assistant to the General Manager.

—Mr. J. F. Alden, long connected with the Leighton Bridge and Iron Works of Rochester, and for the past six years Chief Engineer of same, has formed a partnership with the M. Lassig Bridge Works, of Chicago, Ill. Mr. Alden is a graduate of the Rensselaer Polytechnic Institute at Troy.

—Mr. R. W. Thompson, Jr., for several years past General Passenger and Ticket Agent of the Texas & Pacific road, has resigned his position, to date from July 6. It is understood that Mr. Thompson will have a position as Passenger Agent for all the Gould lines to and in Texas, with office at Dallas.

—Mr. A. W. Cable, General Passenger and Freight Agent, Auditor and Purchasing Agent of the Poughkeepsie, Hartford & Boston road and Secretary of the Poughkeepsie Bridge Company, died at his residence in Poughkeepsie, N. Y., July 12, aged 48 years. He was an active and public-spirited citizen of his native town.

—On July 6 a party of surveyors on the Mexican Central line were attacked by Apaches about 40 miles south of El Paso del Norte, in Mexico, and severely handled. All of them escaped, however, except five, Charles Greene, of Independence, Kan.; Larry Fordham, of Boston; Guy Leavitt, of Indiana; George Wallace, of Taylorsville, Ill.; and Charles Haines, of Kan. The men were shot down and killed by renegade Apaches while running from the wagon. The bodies were found nude and badly decomposed, and were buried on the spot.

—The resignation of Mr. John King, Jr., as First Vice-President, and of Mr. Keyser as Second Vice-President of the Baltimore & Ohio were presented to the board July 13 and accepted. Both will take effect Aug. 1. Mr. King gives as his reason for resigning after a continuous railroad service of 27 years, from ticket agent to First Vice-President of the company, the present condition of his health and the repeated warnings of his physician that such a step was necessary. Mr. Keyser states that his action has been taken in order that he may devote his attention entirely to his private affairs. A resolution was adopted "that a committee of five of the board of directors, of which committee President Garrett shall be Chairman, be appointed by him to prepare and present to Mr. John King, Jr., a reply to his letter of resignation as First Vice-President of this company, expressive of the sense of this board of its regret that the state of his health should compel him to resign the position, the duties of which have been discharged by him with such signal ability, and so as to promote the best interests of the road and of the entire community." The same committee was also authorized to prepare and present a similar reply to the resignation of Mr. Keyser.

—The Springfield *Republican* says: "The death of Carl O. Wederkinch in Honduras removes a civil engineer of reputation and great promise, and a man warmly esteemed by many friends in Western Massachusetts. The career of this young Dane illustrates the possibilities of American life, and makes an interesting and instructive story. Like Carl Schurz, Mr. Wederkinch landed at New York with no knowledge of English; he had taken a $200 prize at the university in Copenhagen, which according to its conditions, must be spent abroad. He could find no employment at engineering, and, in straits, drifted to Boston and began at the bottom of a machine-shop; then was employed by an instrument maker; at last, having in the meantime mastered English, succeeded in gaining a subordinate position on the Hoosac Tunnel engineering corps. He made all these circumstances contribute to his growth, maintained a steady and sunny confidence in himself, and in the most difficult and hazardous post on the Hoosac Mountain, the work of sinking the central shaft, achieved a splendid reputation. He patented many valuable inventions, and was a remarkable instrument maker, doing his own fine work. His original devices and accurate work secured the engineering success of the central shaft, and led to his appointment as Chief Engineer of the Sutro Tunnel. After making a good record in Nevada his attention was turned to mining, and he studied the subject carefully, taking a course in the Columbia School of Mines at New York. He made good investments in Nevada, and at his death was superintendent of silver mines in Honduras. He was apparently certain to add wealth to brilliant professional achievements when death came at 35."

TRAFFIC AND EARNINGS.

East-Bound Freight Rates from St. Louis.

At a meeting of freight agents of all railroads running east from St. Louis, held at the office of the Wabash road July 9, the question of low freight rates was freely discussed, and the following resolutions, offered by General Manager Gault, of the Wabash (who presided over the meeting), were adopted:

"1. That the reduction of rates in this market was first made by the agents of fast freight lines, and that we believe said fast freight line agents were so instructed by the managers of Eastern trunk lines:

"2. That so far as any reduced tariffs issued by Chairman Fink, giving rates either from Chicago or St. Louis, are concerned, that this committee have at all times conformed to such tariffs as have been issued by the Chairman, it being, however, a well-known fact that the agents of the fast-freight lines had been using similar or lower rates for many days before the issue of said tariff by the Chairman.

"3. Finding that no rates could be relied upon in this market, our agents and the line agents working over our various roads were at last instructed to take Eastern freight at the same rates as it was taken by the line agents of other roads, and said practice is in force to-day, and is the only way in which rates are made.

"4. That this committee desires to report the statement that there is no actual necessity, so far as we are able to judge, for the continuing of the present low rates, and for the purpose of placing the matter before all the railroads engaged in the carrying business, this committee requests that east-bound rates should be immediately advanced."

The meeting adjourned subject to call of the Chairman, and copies of the above resolutions were sent to all parties interested.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Six months ending June 30:				
Bur., Cedar Rap. & Nor	$997,033	$982,347	I. $14,686	1.5
Central Pacific	10,770,133	8,504,692	I. 2,265,441	26.7
Ches. & Ohio	1,239,291	1,259,036	I. 40,255	3.2
Chi. & Alton	3,207,337	3,424,154	D. 216,817	6.3
Chi. & Eastern Ill.	762,431	532,731	I. 229,700	43.1
Chi. & Gd. Trk.	707,712	593,274	I. 114,438	19.4
Chi., Mil. & St. P.	7,120,000	5,447,465	I. 1,672,535	30.7
Chi. & N. W.	8,952,856	8,484,653	I. 468,203	5.5
Chi., St. P., Minn. & O.	1,683,605	1,336,137	I. 347,468	26.0
Cin., Ind., St. L. & Chi	1,068,186	1,083,793	D. 15,607	1.4
Cin. & Springf	471,806	428,856	I. 42,950	10.0
Cleve., Col., Cin. & Ind.	1,995,274	1,915,526	I. 79,748	4.2
East Tenn., Va. & Ga.	953,964	849,471	I. 104,493	12.3
Flint & Pere M.	904,666	743,117	I. 161,549	21.8
Gt. Western	2,584,058	2,386,408	I. 197,650	8.3
Hann. & St. J.	1,016,394	1,136,554	D. 120,160	10.5
Houston & T. C.	1,754,209	1,460,833	I. 273,576	20.1
Int. & Gt. No.	1,148,153	717,552	I. 430,601	59.5
Lake Erie & West.	615,596	454,970	I. 160,626	35.3
Memphis & Ch.	571,225	492,498	I. 78,727	16.0
Norfolk & Western	983,158	902,514	I. 82,644	9.1
St. L., I. M. & So.	3,329,527	2,618,486	I. 711,041	27.3
St. P., Minn. & Man.	1,948,281	1,438,002	I. 510,279	35.5
Scioto Valley	165,060	135,262	I. 29,798	22.2
Wabash, St. L. & P.	6,227,265	6,347,266	D. 120,001	1.9
Five months ending May 31:				
Bur., Cedar Rap. & No.	$791,121	$828,969	D. $37,848	4.5
Net earnings	176,577	299,622	D. 123,045	41.0
Ches. & Ohio	1,054,986	1,044,781	I. 10,205	1.0
Net earnings	87,584	217,715	D. 130,131	55.1
Chicago Bur. & Quincy	7,014,744	7,976,649	D. 961,905	12.1
Net earnings	3,036,929	4,163,565	D. 1,126,636	26.8
Cleve., Mt. Ver. & Del.	168,087	176,948	D. 8,861	5.0
Net earnings	25,768	43,421	D. 17,653	41.0
Des Moines & Ft. Dodge	122,812	110,932	I. 11,880	10.7
Net earnings	9,107	42,605	D. 33,498	77.9
Mem., Pad. & No.	95,513	81,442	I. 14,071	17.4
Net earnings	11,992	10,162	I. 1 830	17.9
St. L., I. M. & So.	2,861,127	2,255,032	I. 606,095	26.9
Net earnings	792,298	702,040	I. 90,258	12.8
Month of June:				
Atchison, Top. & S. F.	$1,186,000	$747,012	I. $438,968	58.4
Bur., Cedar Rap. & No.	205,912	153,378	I. 52,534	34.3
Ches. & Ohio	244,305	214,255	I. 30,050	14.0
Central Pacific	2,063,000	1,724,950	I. 338,050	19.1
Chi. & Alton	616,935	617,524	D. 589	0.9
Chi. & Eastern Ill.	140,289	93,234	I. 47,055	50.6
Chi., Mil. & St. P.	1,731,000	1,037,958	I. 693,042	66.9
Chi. & N. W.	2,231,900	1,666,432	I. 565,468	33.9
Chi., St. P., Minn. & O.	404,241	218,093	I. 186,248	88.5
Cin., Ind., St. L. & Chi	188,256	200,332	D. 12,076	6.0
Cin. & Springfield	83,439	73,678	I. 9,761	13.2
Cleve., Col., Cin. & Ind.	393,914	354,011	I. 39,903	11.3
East Tenn., Va. & Ga.	129,646	111,812	I. 17,834	15.9
Flint & Pere M.	160,588	133,297	I. 27,291	20.5
Hann. & St. J.	194,949	179.396	I. 15,553	8.6
Houston & T. C.	227,323	195.329	I. 31,994	16.4
Int. & Gt. N.	172,004	96,206	I. 75,798	79.0
Lake Erie & Western	127,996	105,565	I. 22,431	21.2
Mem. & Charleston	75,276	52,865	I. 23,411	44.2
Norfolk & Western	150,756	133,764	I. 16,992	12.6
St. P., Minn. & Man	405,322	243,407	I. 161,915	66.6
Scioto Valley	38,239	21,874	I. 16,365	74.4
Wabash, St. L. & P.	1,308,992	1,144,755	I. 164,237	14.3
Third week in June:				
Minn. & St. Louis	$95,104	$47,043	I. $48,061	102.2
First week in July:				
Chi., Mil. & St. Paul	$365.000	$240,179	I. $124,821	52.0
Louisv. & Nash.	177,000	139,700	I. 37,300	26.6
Mil., L. S. & W.	9,844	5,924	I. 3,920	66.3
Northern Pacific.	73,428	54,481	I. 18,947	35.0
St. L. & San Fran.	52,500	40,100	I. 12,400	30.9
Union Pacific	722,454	462,939	I. 259,515	56.1
Week ending July 2:				
Chi. & Gd. Trk.	$30,208	$40,259	D. $10,051	24.9

For a number of these reports we are indebted to the *Commercial and Financial Chronicle.*

Grain Movement.

For the week ending July 2 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Year.	Northwestern receipts.	Northwestern shipments. Total.	By rail.	P. c. by rail.	Atlantic receipts.
1874	3,825,508	3,380,618	1,420,103	42.0	4,351,626
1875	2,257,306	2,939,833	786,919	26.7	2,805,086
1876	2,737,617	2,970,194	1,205,184	40.6	3,824,336
1877	1,939,151	2,416,415	557.394	23.1	2,060,484
1878	3,006 566	3,050,500	826,301	27.0	3,662,715
1879	3,779,676	3,829,431	1,236,651	32.3	3,457,237
1880	5,117,800	6,025,682	1,709,241	28.4	8,192,047
1881	7,649,571	6,259,673	2,542,753	40.6	7,169,106

The receipts of the Northwestern markets for the week have been exceeded but once this year, and were exceeded but twice last year before harvest, and were never equaled in any earlier year until after harvest. The shipments of these markets were a sixth less than the previous week (which was the first of the low rail rates), but with that exception were the largest of the year. Last year they were larger in every June week, but in only one week in July. The rail shipments were a million bushels—nearly 30 per cent.—less than the week before, but with that exception were much the largest since navigation opened this year, and larger than in any week last year, while lake navigation was open, the rates being just half as high as last year's. In 1879, when rail rates were lower, even than now, there were but three weeks when as much as 2,500,000 bushels were shipped by rail from these markets, and in previous years, even when rates were lowest, so much was never shipped any week while the lakes were open.

In this week ending July 2 the effect of the low rail rates is first felt on the Atlantic receipts, which are one-fifth larger than the week before, and the largest of the year. They were, however, exceeded many times last year; indeed, from the 24th of May until September, last year, there was but one week that the receipts were not larger. The percentages of the total Northwestern and Atlantic receipts arriving at each market in each of the last two weeks were:

Northwestern:	Week ending June 25.	Week ending July 2.	*Atlantic:*	Week ending June 25.	Week ending July 2.
Chicago	58.1	70.2	New York	48.2	54.8
St. Louis	15.0	8.1	Baltimore	18.1	17.1
Peoria	8.3	7.3	Montreal	7.5	9.4
Toledo	8.2	6.5	Boston	10.2	8.0
Milwaukee	6.9	4 9	Philadelphia	4.7	6.0
Detroit	1.0	1 3	New Orleans	11.2	4.6
Cleveland	1.1	0.9	Portland	0.1	0.1
Duluth	1.1	0.8			
Total	100.0	100.0		100.0	100.0

The notable feature in the Northwestern receipts is the enormous receipts of Chicago, which are 1,150,000 bushels more than the week before, and 1,686,000 more than two weeks before. Meanwhile the receipts are smaller almost everywhere else, and a great deal smaller at St. Louis, which has only half its average receipts of late weeks. Usually very low rail rates tend to take traffic from rather than to Chicago, the grain from the South and Southwest then going directly east, instead of to the lakes. But at present the grain is coming chiefly from the country west and northwest of Chicago, or from points whence the through rail rate is no higher by way of Chicago than by lines south of it, so that a very large proportion of the rail shipments go by way of Chicago. Last year at this time Chicago was getting a much smaller proportion of the grain, but St. Louis has not lost but has gained since then. The losses have been chiefly at Toledo, Detroit and Duluth. At the latter place receipts have been reported this year only for the last two weeks, while last year they began the middle of May.

Contrary to what is customary, New York appears to be gaining most by the low rail rates which deprive it of the advantage of the cheapest route, rail rates being about as low as canal rates. It is, however, unsafe to base calculations on a single week's business, which is all we have reported above during which there were Atlantic receipts under the 15 per cent. rate.

Exports from Atlantic ports for five successive weeks have been:

	Week ending July 6.	June 29.	June 22.	June 15.	June 8.
Flour, bbls.	63,348	64,313	59,015	87,677	89,679
Grain, bush.	3,773,376	4,839,032	3,427,710	4,039,736	4,531,310

For the eight weeks ending June 29 receipts and shipments this year and last have been:

	1881.	1880.	Inc. or Dec.	P. c.
Flour, bbls.	639,879	617,542	Inc. 21,337	3.5
Grain, bush.	31,553,598	44,828,454	Dec. 13,274,856	29.6

This vast decrease in exports is chiefly corn (9,500,000 bushels, or 42 per cent.), but also largely wheat (3,300,000 bushels, or 16½ per cent.). Hitherto wheat exports have been considerably and flour exports enormously larger than last year.

For the week ending July 1 receipts and shipments at Buffalo were:

	Receipts. 1881.	Receipts. 1880.	Shipments. 1881.	Shipments. 1880.
By water	2,480,000	4,071,735	917,460	2,069,000
By rail	886,400	674,880	2,129,600	1,819,950
Total	3,366,400	4,746,615	3,047,060	3,888,950

This year 26.3 per cent. of the receipts were by rail, against 14.2 last year; and 70 per cent. of the shipments were by rail, against 47 per cent. last year.

Receipts at four Eastern ports for the six months ending July 1 have been:

Receipts at four Eastern ports for the six months ending with June have been:

Grain:	New York.	Boston.	Philadelphia.	Baltimore.
1881	48,902,482	10,999,411	12,209,315	19.160.831
1880	54,582,896	10,576,631	21,604,085	20,918,854
Decrease.	5,680,414	Inc. 422,780	Dec. 9,394,770	Dec. 1,758,023
Per cent.	10.4	4.0	43.5	8.4
Flour, bbls:				
1881	2,984,629	1,223,404	498,773	453,101
1880	2,067,374	819,864	334,756	243,514
Increase.	917,255	403,540	164,017	209.587
Per cent.	44.4	49.2	49.0	87.0

Receipts and shipments at Chicago and Milwaukee for the week ending July 8 were:

	Receipts. 1881.	Receipts. 1880.	Shipments. 1881.	Shipments. 1880.
Chicago	2,882,386	2,250.266	2,680,425	3,920,883
Milwaukee	278,562	170,402	454,918	197,069

The Chicago shipments, in spite of the low rail rates, were nearly a third less than last year.

Receipts and shipments at Buffalo for the same week ending July 8 were:

	Receipts. 1881.	Receipts. 1880.	Shipments. 1881.	Shipments. 1880.
By water	2,073,000	2,156,000	1,248,000	2,219,940
By rail	637,900	634,800	1,556,400	1,388,200
Total	2,710,900	2,790,800	2,804,400	3,608,140

In receipts there is not much change from last year. The canal shipments are 56 per cent. less and the rail shipments 22¼ per cent. greater. The rail shipments were 38½ per cent. of the whole last year and 55⅓ this year. Receipts at four Eastern Atlantic ports for the same week ending July 8 were:

	New York.	Boston	Philadelphia.	Baltimore.
1881	2,312,357	440,892	625,000	862.566
1880	3,856,969	689,330	393,300	998,168

New York received 63 per cent. of the whole this year, against 60 per cent. last year. The places receiving by rail solely have not gained so much since the low rates were made as was to be expected.

San Francisco wheat exports for the California crop year ending June 30 were as follows, flour reduced to wheat in the totals:

	1880-81.	1879-80.	Increase.	P. c
Flour bbls	541,889	494,825	47,064	9.5
Wheat, bush	22,302,737	17,419,733	4,883,004	28.1
Total, bush	25,012,182	19,893,858	5,118,324	25.7

Exports of California barley by sea for the crop year were 486,619 centals, an increase of 10.4 per cent. over the previous year. Rail shipments east were 808,744 centals, making a total of 1,295,363 centals for the year.

Chicago and Milwaukee Receipts.

Receipts in the first week of June were:

Chicago:	1878.	1879.	1880.	1881.
Grain, bu	2,135,682	2,869,396	2,716:212	4,636,907
Flour, bbls	43,621	61,330	47.106	122.183
Hogs, No	94,439	76,987	132.536	123,089
Milwaukee:				
Grain, bu	403,258	353.540	203,891	325,687
Flour, bbls	42,586	37,910	44,561	88.007
Hogs, No	3,734	2,907	4,975	5,658

The Chicago grain receipts were extraordinarily large for the season; and taking flour and grain together those of Milwaukee were larger than ever before at this time.

Coal Movement.

Anthracite tonnages for the six months ending July 2 are reported as follows, the tonnage in each case being only that originating on the line to which it is credited :

	1881.	1880.	Inc. or Dec.	P. c.
Phila. & Reading....	3,054,759	2,658,833	I. 395,926	14.9
Northern Central, Shamokin Div., and Summit Br. R. R	454,224	341,447	I. 92,777	27.3
Sunbury, Hazelton & Wilkesbarre....	1,224	6,331	D. 5,107	81.1
Pennsylvania Canal.	164,724	155,855	I. 8,869	5.7
Central, of N. J., Lehigh Div.....	2,050,269	1,651,657	I 398,612	24.1
Lehigh Valley.....	2,584,660	1,941,642	I. 643,018	33.2
Penn & N. Y.....	39,449	14,322	I. 25,127	16.9
Del., Lackawanna & Western.....	1,960,377	1,622,429	I. 337,948	20.8
Del. & Hudson Canal Co	1,651,298	1,438,789	I. 212,509	14.8
Penn Coal Co.....	585,883	470,275	I. 115,608	24.6
State Line & Sullivan.	31,017	20,419	I. 10,598	52.9
Total anthracite.	12,577,884	10,321,989	I. 2,255,895	21.8

The tonnage of anthracite for the corresponding period for six years has been :

1881	12,577,884	1878.....	7,212,065
1880	10,321,989	1877.....	9,915,120
1879.....	12,033,998	1876.....	7,165,324

Anthracite coal tonnage of the Belvidere Division Pennsylvania Railroad for the six months was as follows:

	1881.	1880.	Increase.	P.c.
Coal port for shipment.....	23,583	14,876	8,707	58.1
South Amboy "	321,531	193,189	128,342	66.7
Local on N. J. lines.....	346.101	233,088	113,013	48.5
Co.'s use on N. J. lines.....	52,669	49,711	2,958	5.9
Total.....	743,884	490,864	253,020	51.5

Of the total this year 594,578 tons were from the Lehigh Region and 149,306 tons from the Wyoming Region.

Actual tonnage of anthracite passing over the Pennsylvania & New York road for the seven months of its fiscal year from Dec. 1 to July 2 was: 1881, 548,038; 1880, 372,028; increase, 176,010 tons, or 47.3 per cent.

Semi-bituminous tonnages reported for the six months were as follows:

	1881.	1880.	Inc. or Dec.	P.c.
Cumberland	950,756	1,028,880	D. 78,124	7.6
Huntingdon & Broad Top..	111,033	107,162	I. 3 871	3.6
East Broad Top.....	35 916	39,177	D. 3,261	8.4
Tyrone & Clearfield.... ..	1.182 802	698.460	I. 484,342	69 4
Bellefonte & Snow Shoe...	49,341	31,847	I. 17,494	54.7
Total semi-bituminous....	2,329,848	1,905,526	I. 424,322	22.3

The great increase in Clearfield is remarkable. Cumberland is gradually improving.

Shipments of Cumberland coal were by the following routes :

	1881.	1880.	Inc. or Dec.	P. c.
Baltimore & Ohio.....	649,310	655,586	D. 6,276	0.9
Bedford Div. Pa. R. R.....	87,119	113,452	D. 26,333	23.3
Chesapeake & Ohio Canal..	174,218	240,524	D. 66,306	27.6
George's Creek & Cumberland.....	22,923	.....	I. 22,923	.....
Total.....	933,570	1,009,562	D. 75,992	7.5

Actual tonnage passing over the Huntingdon & Broad Top road for the six months was :

	1881.	1880.	Inc. or Dec.	P. c.
Broad Top coal.....	111,033	107,162	I. 3,871	3.6
Cumberland coal.....	125,522	130,653	D. 5,131	3.9
Total..... .	236,555	237,815	D. 1,260	0.5

The Broad Top coal is mined on the line ; the Cumberland carried through for the Pennsylvania Railroad.

Bituminous tonnages reported for the six months are :

	1881.	1880.	Inc. or Dec.	P.c.
Barclay R. R & Coal Co....	250,959	259,804	D. 8,845	3.5
Allegheny Region Pa. R. R.	137.888	178,374	D. 40,486	22.7
Penn & Westmoreland.....	425,535	559,949	D. 134,414	24.0
West Penn. R. R.....	159,288	136,879	I. 22,409	16.4
Southwest Penn. R. R.....	15,221	27,816	D. 12,594	45.0
Pittsburgh Region Pa. R. R.	315,452	269,265	I. 46,187	17.2
Total bituminous....	1,304,343	1,434,087	D. 129,744	9.0

The falling off in the Pennsylvania rail bituminous trade is considerable and may be attributed to various causes, such as a falling off in the demand from the iron trade, the increase in semi-bituminous product taking the Eastern market, the increase in West Virginia gas coal production, and the better river trade in the absence of the drought which last year closed the Ohio to coal boats so long. In the absence of any definite statistics of the river coal trade, however, this is merely speculation.

Coke tonnages reported for the six months are as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Snow Shoe and Clearfield...	4,012	.....	I. 4,012	.....
Allegheny Region, Pa. R.R.	50,530	32,136	I. 18,394	57.4
Penn. & Westmoreland.....	101,418	66,709	I. 34,709	51.8
West Penn. R. R.....	59,314	46,027	I. 13,287	28.9
Southwest Penn. R. R... ..	706,627	533,554	I. 173,073	32.4
Pittsburgh Region Pa. R. R.	315,166	228,397	I. 86,769	38.1
Total coke...	1,237,067	906,823	I. 330,244	36.4

The extension of coke production continues, and a number of new coke ovens are under construction or projected in the Connellsville and Pittsburgh regions.

The coal tonnage of the Pennsylvania Railroad for the six months was:

	1881.	1880.	Inc. or Dec.	P.c.
Anthracite.....	635,744	502,789	I. 132,955	26.5
Semi-bituminous.....	1.447,072	957,269	I. 489,803	51.3
Bituminous.....	1,053.384	1,182,442	D. 129,058	10.9
Coke.....	1,237,067	918,902	I. 318,165	36.6
Total.....	4,373,267	3,561,402	I. 811,865	22.8

The tonnage of all kinds in June was 797,925 tons, against 662,360 in May, 728,351 in April, 917,318 in March, 620,155 in February and 652,158 in January.

The coal tonnage of the Chesapeake & Ohio Railroad for the five months ending June 1 was as follows:

	1881.	1880.	Increase.	P. c.
Coal.....	307,560	210,752	96,808	46.0
Coke.....	30,773	14,263	16,510	115.5
Total....	338,333	225,015	113,318	50.4

Coal receipts at San Francisco for the half-year ending June 30 were 371,600 tons. Of this 172,400 tons were Pacific Coast coal; 85,000 tons from British Columbia; 12,400 tons Eastern (anthracite and Cumberland); 29,500 tons Australian, and 72,300 tons English coal.

Crop Prospects.

The Ohio State Board of Agriculture reports that on July 1 the condition and prospects of crops in percentages of the same one year ago were: Wheat, 77; oats, 94; corn, 76; hay, 92. This would make the crop of wheat about 9,000,000 bushels less than last year.

An estimate from St. Paul gives the wheat acreage of Minnesota as 200,000 to 250,000 acres less than last year, and the probable yield 3,000,000 bushels more, or 45,000,000 bushels.

June Water Rates.

The Buffalo *Commercial Advertiser* says : "If any one entertains a doubt as to the demoralizing influence of railway wars upon the transportation business, it will be dispelled by a casual glance at the freight quotations and freight earnings. As already shown in these columns, the rail rate from Chicago to New York before the rupture was 35 cents a hundred on grain. It is now from 10 to 12½ cents. [It has not been 35 cents since navigation opened, but 30, 25 and 20.] The following statement showing the average rate on wheat from Chicago to Buffalo by lake, and the average on corn hence to New York by canal for June in a series of years indicates the effect of railway conflicts upon the water route:

	Lake.		Canal.	
Year.	Wheat. cents.	Corn. cents.	Wheat. cents.	Corn. cents.
1872.....	8.3	7.3	12.1	11.1
1873.....	6.5	5.8	10.6	9.5
1874.....	4.2	3.9	11.3	10.3
1875.....	3.0	2.6	6.9	6.3
1876.....	2.5	2.3	6 2	5.4
1877.....	2.4	1.9	5.0	4.3
1878.....	2.1	1.8	4.7	4.1
1879.....	2.1	1.8	4.1	3.6
1880.....	7.1	6.6	6.9	6.4
1881.....	4.1	3.6	4.7	4.2

"There is no material change in the general condition of affairs this year from last, with the single exception that now the railways are fighting and then they were working harmoniously. Large amounts of property were awaiting shipment at the opening of navigation in both years, and the general trade of the country was good in both instances. But the result of the railway conflict is that a season which promised good returns has been turned into a most unsatisfactory and unprofitable one. In the month of June last year, the receipts of grain at Buffalo by lake aggregated 18,514,000 bushels; in the same month this year it was only 12,728,000 bushels. The immense business of last year was done at an average of 7.1 cents a bushel on wheat; this year the average was only 4.1 cents. The aggregate receipts at Buffalo, from the opening of navigation to July 1, 1880, was 40,587,000 ; this year 20,364,000 bushels. The average freight rate for the season of 1880, to July 1, was 6 cents a bushel; for 1881, to July 1, it was 4.4 cents. It appears then that lake vessels in the grain trade earned in 1880, during the period indicated, $2,435,166; this season they earned only $896,016, which is a loss of $1,539,144.

"If we extend the comparison to the canal trade, we shall find a similar heavy decrease of receipts. The shipments by canal from Buffalo last season to July 1 aggregated 23,015,000 bushels; the average season freight to July 1 was 6½ cents; the aggregate shipment this year to July 1 was only 9,076,000, and the average freight rate 5 cents a bushel. Hence canal boats in the Buffalo grain trade last season earned $1,695,975; this year $453,850; indicating a loss of $1,242,175. The sum total of the business is, the water route has earned thus far this season $2,781,319 less than for the corresponding months of 1880.

"This tremendous loss of business is chiefly due to the action of the trunk line railways. The ruinous cutting and slashing of rates have diverted large amounts of trade from the water route. If this had been done at a profit to the railways there would not be much room for fault-finding, as the people care little how property is moved. But when this ruinous competition is resorted to in the summer season, at actual and heavy loss to the railroads as well as to the water route, which loss the roads will make good the coming winter by charging extortionate rates, then there is good cause for complaint."

The Southern Route to California.

From July 1 the carriage of through freight to and from the Pacific Coast by the Southern Pacific and the Atchison, Topeka & Santa Fe roads was resumed. Through and local rates and the division of freights have been agreed on by the roads in interest. This resumption of freight business by the Southern route is one of the results of the recent conference in Boston.

Flour and Grain Exports.

Exports of flour, wheat and corn from four Eastern ports for the first half of the year have been:

	1881.	1880.	Inc. or Dec.	P. c.
Flour, bbls.:				
New York.....	2,680,461	1,632,858	I. 1,047,603	64.1
Boston.....	644,344	502,643	I. 141,701	28.2
Philadelphia	139,228	130,410	I. 8.818	6.8
Baltimore.....	258,837	243.080	I. 15,757	6.5
	3,722,870	2,508,991	I. 1,213,879	48.4
Wheat, bu.:				
New York... . ..21,819,467	27,734,836	D. 5,915,369	21.3	
Boston...	1,807,013	1,899,975	D. 92.962	4.9
Philadelphia.....	5,373,024	3,924,756	I. 1,448,268	36.9
Baltimore..... 10,800,528	9,784,026	I. 1,016,502	10.4	
Total..... 39,800,032	43,343,593	D. 3,543,561	8.2	
Corn, bu.:				
New York.....15,925,794	21,185,141	D. 5,259,347	25.0	
Boston.....	3,890,747	6,602.249	D. 2,711,502	41.1
Philadelphia	3,709,419	12,163,295	D. 8,453,876	68.7
Baltimore	8,095,907	10,793,586	D. 2,697,679	25.0
Total.....31,621,867	50,744,271	D. 19,122,404	37.7	
Flour and grain, bu.:				
New York.....49,807,336	56,267,838	D. 6,460,502	11.5	
Boston.....	8,597,308	10,764,118	D. 2,166,810	20.1
Philadelphia.....	9,708,969	16,674,896	D. 6,965,927	41.8
Baltimore..... ...20,061,201	21,671,472	D. 1,610,271	7.4	
Total.....88,174,814	105,378,324	D. 17,203,510	16.3	

There has thus been an increase in the aggregate exports of the four ports of 48.4 per cent. in flour, but a decrease of 8.2 per cent. in wheat and 37.7 in corn, and taking all these together there has been the large decrease of 16.3 per cent. Of the entire very large *gain* in flour exports, New York had more than five-sixths, and of the total flour exports this year 72 per cent. were from New York and 17 per cent. from Boston ; while of the wheat exports 55 per cent. was from New York, 27 per cent from Baltimore, and 13½ from Philadelphia. The decrease in wheat has been chiefly at New York, but taking wheat and flour together, its exports are nearly as large as last year. Philadelphia makes a large gain in wheat, and Baltimore a smaller one. In corn there is a decrease everywhere, amounting to nearly 69 per cent. at Philadelphia, to 41 per cent. at Boston, and to 25 per cent. at New York and Baltimore. The vast decrease at Philadelphia is remarkable. Taking flour, wheat and corn together (not much other grain is exported), there is a decrease at each of these three ports, being greatest (nearly 42 per cent.) at Philadelphia, and least (7.4 per cent.) at Baltimore.

Southern Railway & Steamship Association.

The following circular from General Commissioner Powers is dated Macon, Ga., June 29:

"On account of reductions on grain and provisions by Trunk Lines to Eastern ports and by Trunk Lines and steamers to Southern coast cities, whereby Southern interior cities are injured, it becomes necessary to reduce rates on Classes B, C, D, F and G, from the West to interior points.

"I have taken vote of the Rate Committee upon the subject, and the rates as below are authorized, taking effect at shipping point Monday, July 4, 1881:

To Atlanta, Augusta and Macon, Ga. From	Line.	Per 100 pounds. B	C	D	Per barrel. F	G
Chicago, Peoria, Pekin and Havana.....	Green	53	47	43	90	165
St. Louis, East St. Louis, Indianapolis and Terre Haute.....	Green	48	42	39	82	150
Aurora, Madison, Jeffersonville, Evansville, Cairo, Cincinnati, Louisville, Henderson, East Cairo, Columbus and Hickman.....	Green	38	34	31	66	115
Memphis Levee.....	Green	36	32	29	62	108
Memphis Depot.....	Green	33	29	26	56	98
Nashville.....	Green	30	27	24	52	93

"To make rates to Athens, Milledgeville, Albany, etc., and all other interior points based on Atlanta or Macon, add same differences in cents as appear in Circular No. 14, Series of 1880–81, Rates from all points to all points on all other classes will remain as per Circular No. 14.

"There is also authorized the following rates to *Atlanta only:*

From Richmond, Norfolk, etc.....	B	C	D	F	G
	38	34	31	66	115
From Wilmington	B	C	D	F	G
	36	31	29	62	108
From Savannah, Charleston, etc.....	B	C	D	F	G
	32	28	26	56	98

"All the foregoing subject to change without notice."

Chicago Lumber Traffic.

The receipts and shipments of lumber at Chicago from Jan. 1 to June 28 were, in feet :

	1881.	1880.	Increase.	P. c.
Receipts.....	560.514,000	484,178,000	76,336,000	15.7
Shipments.....	350,279,000	298,014,000	52,265,000	17.5

This traffic last year was much larger than ever before.

Chicago Shipments Eastward.

The report of the Chicago Board of Trade shows through rail shipments of freight to the East as follows during the week ending July 9:

	Flour, bbls.	Grain, tons.	Provisions, tons.	Total, tons.	P.c. of total.
Grand Trunk.....	6,120	2,653	46	3,311	7.5
Mich. Cen.....	22,636	3,708	613	584	14.8
Lake Shore.....	14,519	11,739	1,763	14,953	33.7
Fort Wayne.....	15,880	3,403	2.143	7,134	16.1
Pan-handle.....	19,456	4,929	2,624	9,497	21.4
Balt. & Ohio.....	611	2,528	303	2,892	6.5
Total...	79,220	28,960	7,492	44,371	100.0

The shipments reported for the previous week were 55,864, and for the week ending June 25, 72,989. Nearly two-thirds of the shipments in the last week were grain, which is the only freight for which the lake vessels compete to any extent. It is noticeable that the Michigan Central falls far below its pool percentage (26 per cent.), while the Lake Shore is far above its 23 per cent., and the two Vanderbilt roads together have almost exactly their allotted percentage (48½ per cent. against 49). Again, the Fort Wayne is far below its 23 per cent. allotted under the pool, while the Pan-handle has more than double its 10 per cent. The latter is a connection of the Erie as well as the Pennsylvania, and if the latter is short of cars, the Erie probably is not, and is taking all the freight it can get. The two Pennsylvania roads together carried more than their pool percentages; the Chicago & Grand Trunk and the Baltimore both less. The latter usually shows no appetite for traffic when it becomes unprofitable.

RAILROAD LAW.

Elevated Railroad Regulation.

The details of the bill which became a law of this state recently, providing, according to its title, "against accidents on elevated railroads," are not as generally known as they should be. And there can be no doubt that a proper enforcement of the new law will do much to put a stop to some annoying features which have hitherto been part of the system of running these roads. The act provides that trains shall come to a full stop before passengers shall be permitted to leave them, and that no train shall leave a station until every person desiring to depart shall have left the car, provided the person has manifested this desire by moving toward a platform. Neither shall a train start until every person desiring to board the cars has done so, although this provision is not to conflict with the right of the employés of the railroads to prevent passengers boarding a train which is full. The gates of the platforms must be so constructed that when opened they shall be caught and held open by a latch or spring which will prevent their swinging against and obstructing passengers going in or out. The cars are not to start until the gates are closed. The penalties provided by the act seem to be severe enough to accomplish the objects aimed at. Thus, it is made a misdemeanor, with a penalty consisting of a fine of from $25 to $100, or imprisonment of from 10 to 90 days, or both, for any employé of the railroad corporation who shall start a train or give a signal or order to start it, obstruct the ingress or egress of any passenger, or open or close a platform gate, in violation of the provisions of this act. Then, again, it is provided that any elevated railroad corporation which fails to comply with or enforce these provisions "shall, upon the petition of any citizen to any court of record, and upon due notice to such corporation and proof of such failure or neglect, pay to the Clerk of the Court wherein such petition is made a sum not less than $250 nor more than $1,000, as such court may direct by its order." The fines so collected are to be paid to the County Treasurer, who is directed to distribute the money equally among the public hospitals of the county. In express terms the act is declared not to relieve the companies from any existing liability for damages to persons or property, and the officers of these corporations are directed to print copies of the act and to post them conspicuously in their cars and stations.—*New York Times.*

THE SCRAP HEAP.

Locomotive Building.

The Schenectady (N. Y.) Locomotive Works are very busy, filling heavy contracts for the New York Central and Lake Shore roads.

The Illinois Central shops in Chicago are building 10 mogul freight engines for the road.

The Chicago & Northwestern shops in Chicago are building six passenger engines with 17 by 24 in. cylinders and 5½ ft. drivers.

The Hinkley Locomotive Co., in Boston, is building a

freight engine for the Hartford & Connecticut Valley road, besides a number for other roads.

Car Notes.

The New York, New Haven & Hartford shops, in Hartford, Conn., are building 50 box cars for the road.

The Gilbert Car Works, in Buffalo, N. Y., have lately closed contracts for 200 box cars for the New York, Ontario & Western, and 300 for the Northern Pacific. The works are running full and turning out six or seven cars a day.

The Ohio Falls Car Co., at Jeffersonville, Ind., has a large amount of work on hand, having contracts to fill for about 100 passenger cars and a large number of freight cars.

The Wabash, St. Louis & Pacific shops at Toledo, O., are building 15 baggage and 3 pile-driver cars, besides a large number of freight cars.

The car works of Pardee, Snyder & Co., at Watsontown, Pa., are being enlarged by an addition to the wood-working shop 50 by 60 ft. The blacksmith shop has been nearly doubled in size.

The Barney & Smith Manufacturing Co., in Dayton, O., is building three dining cars for the Wabash, St. Louis & Pacific road.

The Cleveland Bridge & Car Works have built a "whale" car consisting of two coupled flat cars carrying a frame and canvas covering. It carries the embalmed remains of one of Jonah's friends for exhibition in the rural districts.—*Trade Review.*

The Terre Haute Car Co. is adding a new wood machine shop and erecting shop to its works in Terre Haute, Ind. A new foundry is also to be built at once.

Bridge Notes.

The Philadelphia Bridge Works of Cofrode & Gaylor, at Pottstown, Pa., are full of work, and have been running over-time.

The Phœnix Iron Co., at Phœnixville, Pa., is turning out the iron work for the new bridge over the Hudson at Albany, N. Y. Eight of the columns for this bridge are 53 ft. 3⅜ in. long, and weigh about 18,800 lbs. each.

Iron and Manufacturing Notes.

The New Tacoma Iron Co. has been organized to build a blast furnace at New Tacoma, Wash. Ter., and has bought a large tract of iron land on the Skagit River.

The Nashua Iron & Steel Co., at its recent annual meeting in Nashua, N. H., elected officers as follows: John A. Burnham, President; Daniel Huzzey, Aretus Blood, Virgil C. Gilman, J. A. Burnham, Jr., directors; M. A. Herrick, Clerk and Treasurer.

The blast furnace of the Huron Iron Co., at Cassville, Mich., is to be put in blast soon.

Jackson Furnace, at Fayette, Mich., has gone out of blast for repairs, which will take two months to complete.

The Calumet Iron & Steel Co. has been organized in Chicago, with $2,000,000 capital stock. C. R. Cummings, J. W. Flower and Wm. B. Howard are the incorporators.

The Crane Iron Co. has put its No. 3 furnace, at Catasauqua, Pa., into blast.

The Catasauqua Manufacturing Co., at Catasauqua, Pa., has nearly completed a large addition to its rolling mill.

Himrod Furnace, at Youngstown, O., has gone out of blast.

Means, Kyle & Co. are building a new furnace at Hanging Rock, O., which will be 65 ft. high and 17 ft. bosh.

The Tennessee Coal and Railroad Co. has put in blast its new furnace at Cowan, Tenn. It is 65 ft. high and 15 ft. bosh, and has all the latest improvements. It will use coke for fuel.

The Rail Market in the First Half of 1881.

The *Iron Age* reviews as follows the course of the rail market during the first half of the current year:

Steel Rails.—A very large business has been done in steel rails, the mills being constantly crowded with work. Prices have shown very little change, the quotation in January being the same as now—$60 at mill. Sales were made in the interim at both lower and higher prices, according to date for delivery. In cases where requirements were urgent $62.50 to $65 was paid, in order to secure rails for summer delivery, while others who bought for the winter of 1881 and 1882 paid $55 to $58. The feeling among leading buyers at present seems to be in favor of holding off for lower prices, $50 being named as a probable rate for winter work. The capacity for production is expected to be increased to such an extent that there will be no difficulty in obtaining all the rails required for next summer's use. The market at present is, therefore, very quiet, the only business doing being small lots for prompt delivery at $60 to $62.50. A large business has been done in foreign rails, about 100,000 tons having been bought since January, for shipment to New Orleans and Galveston, at a cost varying from $61.50 to $65, according to date and port. The outlook is entirely satisfactory to American manufacturers. The demand promises to be large, and there is no difficulty in meeting outside competition, and as soon as the mills are in a position to supply the rails, it is not likely that any orders will be allowed to go abroad.

Iron Rails.—This branch of the iron trade has been in a prosperous condition the past six months. There has been an abundance of orders, and in all sections of the country the mills have been kept full of work. A large proportion have been rolling steel rails from imported blooms, and in no single instance has there been anything like protracted dullness. Prices have been remarkably steady, $47 being the opening price in January, $46 being the lowest at any time within six months, and $46.50 to $47 the price obtainable now for prompt deliveries. As a rule, the mills are full up to September, and inquiries are out for lots sufficient to extend a month longer, so that a full year's business is pretty well assured. For winter work, orders could be placed at $46, and possibly a shade less, but there is not much demand for late deliveries.

Old Rails.—This branch of the iron trade has been a disappointing one during the entire six months. Prices opened in January at $27 for flanges, and steadily advanced until $28.50 was realized in February. Early in March a slight reaction set in, and a decline of about 50 cents per ton took place before the close of the month, which was followed by $1 decline during April, and still another $1 during May. Prices in June opened at about $26, and at times the market gave indications of improvement, but finally settled back to $25.50@$26. There is nothing yet very settled in values, but it is probable that $26, delivered on cars, is a fair average of the market for July deliveries. Stocks are in small compass, but the demand is of very limited character and the feeling rather inclined to weakness.

A Long Train.

The largest train of cars ever drawn was hauled from Columbia to Harrisburg the other day by a Modoc locomotive. It contained 175 cars, 80 of which were loaded. The necessity for such heavy hauling grew out of the fact that a locomotive broke down at Columbia, and it was necessary that its train should be in Harrisburg at a certain hour, so the latter was picked up by the Modoc behind its own train.—*North American.*

This is not the longest train on record. Sept. 30, 1878, an engine of the same class as that above—a Modoc or consolidation engine—hauled over the Northern Central from Clark's Ferry to Sunbury its own train and another whose engine had broken down, making 183 empty box cars, 1 loaded car, 2 cabooses and a dead engine. And an engine on the Lehigh Valley road is on record as having hauled no less than 593 empty coal cars.

A Lesson to Graduates.

An Ohio paper says a young lady who graduated in a calico dress a few years ago, is now married to a railroad superintendent who has an income of half a million a year. This may be taken as a basis for the regulation of graduating dress hereafter. Had she worn alpaca she might have done even better, and caught the general manager of the road. On the other hand, had she blossomed forth in white Swiss, she might have captured the president of the concern, with his untold millions, while, had she worn silk, with point lace and diamonds, she might have scooped in the conductor of a passenger train, and had onyx staircases and alabaster walls to her house, and cut the wives of the officers of the road as society altogether too thin for her style. This thing ought to be a lesson to girl graduates and a sharp warning to patronize their tailors liberally.—*Brooklyn Eagle.*

One Grab Against Another.

The Trenton (N. J.) *Gazette* says: "The ticket agent at the Broad street depot of the Pennsylvania Railroad was sitting behind an open door at the depot, when a tramp came along and peered into the depot. Not seeing the agent behind the door the aforesaid tramp went for the money drawer, and with one grab secured $2.75. Then with one grab, the ticket agent seized the surprised tramp, and for the next five minutes there was some tall fun in that depot. In that time the tramp disgorged the stolen money, was well pummelled, and beat a hasty retreat before the arrival of an officer."

Spoiling His Sunday Suit.

As the 6:45 train from Newark on the Pennsylvania Railroad last evening was rounding the Point of Rocks three boys stepped in front of the engine to avoid an outward-bound train, and one of them was struck by an overhanging cylinder and hurled down the steep embankment at that place. The train was immediately stopped by the application of the air brakes, and the train hands and excited passengers rushed out of the train to gather up the mangled remains of another victim of the rail. On reaching the boy he was found slowly pulling himself together—complaining of the injury done his Sunday suit. He gave his name as Edward Kellen, aged fourteen, living in Brooklyn.—*Jersey City Journal.*

Knew Her Uncle.

The Detroit *Post and Tribune* tells the following incident of the opening of the new line from Detroit to Butler, Ind.:

"At Butler the train was met by a brass band and the entire population that could get away from home. The people cheered, and seemed glad to see the Detroiters, while the band appropriately played 'Hail to the Chief.' While the engine was being reversed the excursionists disembarked and went out to view the land. Butler is all right, what there is of it. The Disciples' church—'Garfield's church,' the villagers called it—was thrown open to allow the visitors a place to get out of the sun. Those who could, sought to brush off some of the dust that adhered to them. Passenger Agent Sheehy, of the Wabash, was approached by a pretty young woman with a two dollar and a half gold piece suspended from her neck. She timidly inquired:

"'You from Detroit?'

"'Yes, ma'am,' smilingly.

"'Do you know my uncle there—Jabez Smith?'

"'Yes—let's see—I—'

"'Did he send any word by you to me?'

"'Yes, he wanted to know how you were, and—'

"'Did he tell you what his last baby's name was?'

"Mr. Sheehy had been answering haphazard and hesitated. His eager questioner continued:

"'Detroit's most as big a place as Butler, isn't it?'

"He gazed around at the half dozen stores, and the two score houses; said he guessed so; that the train was going and he would have to—

"'Tell him you saw me, won't you?' And without giving her name the Hoosier girl began asking an afternoon newspaper man if he knew her uncle too, while Mr. Sheehy fled."

OLD AND NEW ROADS.

Albert.—This company has recently changed its management. The road is now in operation from the Intercolonial at Salisbury, N. B., by Hillsboro to Hopewell, 45 miles.

Atlantic & North Carolina.—The directors have voted to approve the lease of this road to the Midland North Carolina Company. The lessee is to pay $40,000 a year rent, and is to deposit as security one year's rent and $45,000 in addition as security for the equipment. As a condition of the lease work is to be begun on the Midland's proposed line from Goldsboro to Salisbury within three months, and the road is to be finished in three years.

Baltimore & Ohio.—At the meeting of the board in Baltimore, July 13, the resignations of Vice-Presidents King and Keyser were accepted, as noted elsewhere, and the vacancies filled.

Mr. Garrett stated that the third great elevator of the company at Locust Point will be completed about Aug. 20. He also stated that in addition to the 10 important lines of steamships now plying between Baltimore and foreign ports, it was expected that the new line of superior iron steamships—now being built at Barrow-in-Furness—would commence operations in October next. These steamships—the Nessmore, Mentmore and Dranmore—will be 4,000 tons capacity, each with the best improvements and advantages for the shipment of cattle and other live stock, will be placed permanently on the line between Barrow and Baltimore. Mr. Garrett next spoke of the large interest held by the company in the Virginia Midland Railway and detailed at some length the measures and operations now in progress to connect that road with railroads in North and South Carolina and Georgia and the South generally.

Buffalo, Pittsburgh & Western.—Notice is given that holders of Oil Creek bonds due April 1, 1882; Union & Titusville bonds due July 2, 1890, and Pittsburgh, Titusville & Buffalo consolidated bonds due Feb. 1, 1896, will have the option until Aug. 31 of exchanging them at par, with an equation of interest, for Buffalo, Pittsburgh & Western general mortgage bonds due April 1, 1921. The exchange can be made at the office of J. & W. Seligman, New York, or the Fidelity Insurance Trust & Safe Deposit Company in Philadelphia.

Carson & Colorado.—Track on this road is laid and trains are running regularly to Hawthorne, Nev., 100 miles southward from Mound House, the junction with the Virginia & Truckee road. About 50 miles remain to reach Candelaria. Stages and freight lines run from Hawthorne to the Bodie Mining District.

Chicago, Milwaukee & St. Paul.—This company has opened a new through line between St. Paul and St. Louis in connection with the Chicago, Burlington & Quincy. The trains run by Dubuque, Sabula, Rock Island and Monmouth.

Chicago, St. Louis & New Orleans.—This company gives notice that it will pay on presentation at its offices in New Orleans and New York all the overdue valid bonds issued under the second mortgage of Feb. 1, 1866, made by the Mississippi Central Company. The bonds will be paid with the coupon due Aug. 1, and all interest on them will cease from that date.

The following instructions have been issued in view of the approaching change of gauge:

"On Friday, July 29, 1881, the gauge of track between New Orleans and East Cairo will be changed to 4 ft. 8½ in. by moving the west rail in 3½ in.

"At 3 o'clock on morning of day above named section masters may begin this work on their respective sections, under instructions from their road masters.

"Road-masters will see that their forces are sufficiently augmented on each section to do this work promptly on day specified, and will require their section foremen to provide sufficient cooked provisions for feeding all men under their charge on that day.

"They will furnish their section masters with time tickets, to be issued at the close of the day to those men who have worked for that day only; and these time tickets will be paid by the nearest agent.

"Where Wharton switches are in both ends of a side track, which is located on the east side of main track, one of the Wharton switches must be taken out several days before the change of gauge, and a narrow-gauge split switch put in and spiked down until the day of change. On the day of change the Wharton switch at the other end of the side track must be taken out, and a split switch put in, either on that day or as soon thereafter as practicable.

"Where Wharton switches are in the side track, which is on the west side of the main track, one of the switches must be taken out several days before the change, and a wide-gauge stud switch substituted; and on the day of change, this stub switch will be narrowed in, and the Wharton switch at the other end taken out.

"Where stub switches are in use, one end of the side track must be spiked down and all switch-rods sent into shops by the 15th of July, to be narrowed. All extra rods on hand must also be sent to shops before that time, and all of them plainly marked with the number of section, so that the same rods may be returned to the place from which they were sent.

"On day of change, this stub switch, which was spiked down, will be made narrow guage, and the switch at the other end spiked down, and the rods taken off and kept on hand for use when required.

"As soon as practicable after the day of change, split switches will be put in main track in place of all other switches, except at such points at which a third rail is in use.

"The offset plates for split switches, 10 for each switch, and the offset straight fish-plates to connect the two different patterns of rail at split switches, and also the switch stands which may be needed for split switches, will be furnished from McComb City and Water Valley shops.

"Roadmasters will take out one steel rail where split switches are to be used, replace it temporarily with an iron rail, and send the steel rail to the shops, to be bent and returned, to be used for the split switch. Each rail must be plainly marked where it is from, and whether it is for a right or left-hand switch, so that it may be returned to the proper place.

"Station agents will not load freight of any kind, nor receive perishable to be shipped on Wednesday and Thursday, July 27 and 28, except that agents at New Orleans and Cairo may load and ship for the trains elsewhere scheduled.

"Station agents between Cairo and New Orleans must see that all cars coming to them loaded, are unloaded not later than Wednesday night, July 27."

Columbus & Rome.—This road has been sold by its owners, who are chiefly residents of Columbus, Ga., to W. D. Chipley, as agent for W. F. McCormick, of Pensacola, Fla. Mr. Chipley was at one time Manager of the road; in the present transaction it is not clear whether he acts for Mr. McCormick alone, or whether the Louisville & Nashville (with which company Mr. Chipley is now connected) has a hand in the purchase. The road is of 3 ft. gauge, and extends from Columbus, Ga., to Hood, 32 miles. It is said to have the only practicable line into Columbus from the North. The price paid is said to have been about $250,000, including a payment of $40,500 due the state.

Connotton Valley.—Contracts have been let for the building of the Connotton Valley & Straitsville Branch from Canton, O., to Coshocton, 60 miles, the grading to be done by October. Contracts for the 25 miles from Coshocton to Straitsville will be let soon.

Work is actively in progress on the main line from Bedford, O., to Cleveland, 12 miles, and it is to be finished this month.

Ft. Worth & Rio Grande.—This company has been organized to build a railroad from Ft. Worth, Tex., southwest to Brownwood in Brown County. It is to connect with the Texas & St. Louis road.

Franklin & Clearfield.—This company has been incorporated to build a railroad from Chambersburg, Pa., northward to a point in Baccaria township, Clearfield County, a distance of about 80 miles, through a very rough and hilly country. The capital stock is to be $816,000.

Genesee Valley.—The Rochester (N. Y.) *Democrat and Chronicle* says: "In spite of the fact that the recent decision of Judge Rumsey required that all work on the Genesee Valley Canal Railroad should be stopped, Contractor Bennett has kept his men constantly at work, and now he has a large gang grading near the Rapids. Five canal boat loads of steel rails have arrived, and 110,000 ties have been contracted for. Some of the ties, which are from Canada, were bought from Mr. Upton, at Charlotte, and they are expected to arrive daily, by boat via Buffalo. Track laying in the vicinity of Mount Morris will be commenced next week. This work is all done under orders from the majority directors. They have furthermore purchased a locomotive and 20 flat cars that are daily looked for. The minority faction also have a hand in the construction. Under the authority of Messrs. Fisher, Riley, Eaton and Hamlin, they have had patches of road laid at Olean, Mount Morris, Avon and in this city, about one-third of a mile this side of the Vacuum Oil Works. The new ties and workmen for laying this track are reported to have come from the Erie Railroad, the affairs of which have repeatedly been reported to be in combination with the minority directors to prevent the Clark, Post & Martin faction from building the road. Contractor Bennett says that when his men get to the patches of rails they will remove them just as they would any other obstruction. In case they do that thing the legal knot, in which the road is now tied, will probably be made more complicated and more interesting."

Both parties have also issued calls for the annual meeting to be held shortly.

Grinnell & Montezuma.—The extension of this road from Newburg, Ia., on the Central Iowa, northwest to State Centre, on the Chicago & Northwestern, 28 miles, was completed and opened for business, June 30. About 20 miles of the track were laid last winter. The road is worked as a branch of the Central Iowa.

Hartford & Connecticut Valley.—The extension of this road has been located from Hartford, Conn., northward to Rainbow, 12 miles, and work will soon be begun on this section with a view of finishing it this season. There are several large mills on the line.

Hartford & Connecticut Western.—The organization of this company was completed at a meeting held in Hartford, Conn., July 11, and the new company will soon receive the transfer of the old Connecticut Western road from the State Treasurer of Connecticut, who has operated it for the benefit of the bondholders. The new company will take the road free from debt.

Hudson Connecting.—This company has been organized, partly as successor to the old Hudson Connecting Company, and for the purpose of connecting all the railroads entering Jersey City. It will start from a point near the New York, Ontario & Western tunnel and run along the west side of Bergen Hill, crossing the Erie, the Delaware, Lackawanna & Western, the Pennsylvania and the New Jersey Central roads, and round the south slope of the hill to New York Bay below the Central terminus. It is proposed to build docks and warehouses at the bay terminus, and to make all arrangements for transfers between the roads.

Hudson Tunnel Railroad.—Work is progressing quietly on the tunnel under the Hudson River between New York and Jersey City. The older part of the tunnel on the Jersey City side has been much strengthened and the heading is now about 306 ft. out under the river. Work has been begun on the New York side and the heading there will soon be started.

Indiana, Illinois & Iowa.—This company has been organized to build what was formerly known as the Plymouth, Kankakee & Pacific road, from Plymouth, Ind., on the Pittsburgh, Ft. Wayne & Chicago, to Kankakee, Ill., and thence west to a point on the Mississippi River in Mercer County. The distance is about 250 miles, and the capital stock is fixed at $2,500,000. Part of the road was graded nine or ten years ago.

International & Great Northern.—The following circulars have been issued by President R. S. Hayes: "The property of the International & Great Northern Railroad Company having been leased by its stockholders to the Missouri, Kansas & Texas Railway Company, it will from this date be operated by the Missouri Pacific Railway Company, Lessee, and all reports and balances from connecting lines will be made as directed by the latter company.

"Commencing with the business of June 1, all reports for ticket sales and car mileage will be made to C. G. Warner, Auditor Missouri Pacific Railway Company, St. Louis, Mo., by whom drafts for same will be made. All drafts for ticket balances and car mileage will be made upon J. T. Birch, Cashier Missouri Pacific Railway Company, St. Louis, Mo.

"All other reports will be made as heretofore, and balances prior to June 1 will be adjusted as formerly."

Jacksonville, Pensacola & Mobile.—In Jacksonville, Fla., July 9, the United States Circuit Court confirmed the sale of this road and ordered its transfer to the representatives of the Dutch bondholders, who bought it, as soon as the conditions of sale are complied with.

Junction & Breakwater.—It is reported that negotiations are in progress for the sale of the controlling interest in this road, now owned by the Old Dominion Steamship Company, to the Pennsylvania Railroad Company, which now controls the Delaware road. The road extends from Harrington, Del., to Rehoboth, 45 miles, and the control of the road carries with it the Breakwater & Frankford and the Worcester roads, from Georgetown, Del., to Franklin, Va., 56 miles.

Kansas City, Burlington & Santa Fe.—The following circular has been issued:

"The railroad and other property of the Kansas City, Burlington & Santa Fe Railway Company was sold Jan. 17, 1881, under a decree of the District Court of Franklin County, Kan., and a new company organized by the purchasers, under the name of the Ottawa & Burlington Railroad Company, and the property leased by the latter company to the Kansas City, Lawrence & Southern Kansas Railroad Company. The same will hereafter be operated as a branch of the Kansas City, Lawrence & Southern Kansas Railroad."

The road is in operation from Burlington, Kan., to Ottawa, 46 miles.

Knoxville & Ohio.—A dispatch from Knoxville, Tenn., July 8, says: "To-day, at a special meeting of the stockholders of the Knoxville & Ohio Railroad, the road was transferred to the East Tennessee, Virginia & Georgia Railroad Company for $1,152,000."

Kentucky Central.—As previously noted, the gauge of this road was changed from 5 ft. to 4 ft. 8½ in. on July 11. The change was made smoothly and without trouble.

Louisville, Cincinnati & Lexington.—It is announced that a majority of the stock of this company has been sold to the Louisville & Nashville Company. The price paid is 122.6 for both common and preferred stock, holders of preferred to receive also the 4 per cent. dividend lately declared. The purchaser agrees also to take all the additional stock that may be offered up to Sept. 15 at the same price, paying either in cash or notes at one, two, three and four months.

The amount of stock outstanding is $1,500,000 preferred and $1,000,000 common. The company owns a line from Louisville to Cincinnati, with branch to Lexington, 175 miles in all, and works 57 miles of leased lines. It was sold under foreclosure and reorganized in October, 1877. It has always had a large business.

The purchase is an important one, extending the Louisville & Nashville to Cincinnati and giving it an additional interest in that city, besides strengthening its hold on Louisville. The purchased road is of 4 ft. 8½ in. gauge, and its acquisition may hasten the change of the Louisville & Nashville from 5 ft. gauge.

There is a report that the Chesapeake & Ohio is interested in the purchase and will take the Lexington Branch, but this is uncertain.

A dispatch from Louisville, July 13, says: "The Louisville & Nashville company waives the privilege of giving four months' notes for the stock of the Louisville, Cincinnati & Lexington, and is now paying cash for all stock presented. The total amount paid up to the present time is $2,075,715.43."

Louisville & Nashville.—The following circular from the office of the General Manager is dated June 16:

"On and after July 1, next, the 'Owensboro Division' is detached from the Louisville & Nashville Railroad system, and becomes a separate organization to be known as the 'Owensboro & Nashville Railroad Company.'"

The purchase of the Louisville, Cincinnati & Lexington road by this company is noted elsewhere.

Macon & Brunswick.—This company is now prepared to receive bids for the construction of 42 miles of its proposed extension from Macon, Ga., to Atlanta. Bids may be made for grading, bridges, masonry and cross-ties separately, or for the whole work. Plans and specifications may be seen at the office of Thomas & Co., No. 43½ Broad street, Atlanta. Bids may be sent to John H. Sample, Chief Engineer, or W. V. McCracken, Superintendent of Construction, Atlanta.

Proposals will also be received for the remaining 50 miles upon personal inspection of the line by contractors, the company not having fully established the location.

Manhattan Elevated.—The Attorney-General having withdrawn the suit for a receiver begun in New York last week began a new suit in the Supreme Court at Kingston, N. Y. The motion was heard July 13 and the Court declared its intention of appointing a receiver on the following day. Both the Metropolitan and New York companies recommend Judge John F. Dillon, and it was thought that he would be appointed.

Marquette, Houghton & Ontonagon.—Stockholders in this company are offered the privilege of subscribing for $600,000 of the stock of the association which has bought the land grant of the company, each to have the option until July 16 of taking two shares of the land company at par for each 15 shares of the railroad company held by him.

The land company takes the entire land grant not actually in use for the purposes of the road, and is to pay $2,600,000 in cash.

Memphis, Holly Springs & Selma.—A dispatch from Memphis, Tenn., says that this company has sold its property, which includes the partly graded road and franchises of the old Selma, Marion & Memphis road, to Frederick Wolffe, the Financial Agent of the Erlanger syndicate, which owns the Alabama Great Southern road. It is said that the road will be built at once.

Michigan Central.—The organization of the old Union Company, which built and owned about six miles of road, from Kensington, Ill., to the Indiana state line, for this company, has been revived and a formal transfer of the road to this company agreed on. This action was simply for the purpose of perfecting the title of this company to the road, which it has always worked.

In the United States Circuit Court in Detroit, recently, this company filed a petition for an order of the Court directing the Detroit & Bay City Railroad to pay it (the petitioner) the sum of $424,000, now on deposit in the hands of the Farmers' Loan & Trust Company, of New York. That sum is represented by 424 bonds of $1,000 each, issued by the Detroit & Bay City Railroad and guaranteed by the Michigan Central, with interest at 8 per cent. The Bay City mortgage has been foreclosed and the road sold for enough to pay its entire indebtedness, but the 424 bonds are still out (nobody knows in whose hands), and having the Michigan Central's guarantee, of course that company is liable for their payment, principal and interest. Of these 424 bonds 274 mature in 1902, and the remaining 150 mature in 1903. Thus the Michigan Central must carry them at 8 per cent., but if it can get the $424,000 for which it petitions, it can invest the money so as to produce at least say 5 per cent., and thus reduce to 3 per cent. its burden on the bonds in question. The petition was put over to September.

Mississippi Valley & Ship Island.—This road has lately been extended and opened for business to Big Black, Miss., seven miles southward from the old terminus at Goodrum, and 17 miles from Vicksburg.

The company has lately secured control of the old Grand Gulf & Port Gibson road, about eight miles long. Its own line will cross this road about two miles from Port Gibson, and that two miles will be used as part of the main line, the six miles to Grand Gulf being worked as a branch.

Nantucket.—Work on this road was begun last year and part of it was then graded. This year additional capital was secured and the work resumed, and last week it was opened for business from Nantucket, Mass., to Surf Side, 3 miles. It is to run across the island of Nantucket to the village of Siasconset on the south shore, about 12 miles, when finished.

Nashville, Chattanooga & St. Louis.—Sealed proposals will be received at the office of R. C. Morris, Resident Engineer, in Nashville, Tenn., until Aug. 1, for the grading and masonry of the extension of the Sparta Branch from Caney Creek, Tenn., to Sparta, 13 miles. Bids will be received for the whole work or separately for the grading in sections and for the bridge piers at Caney Fork and Town Creek and for the culvert masonry. Plans, profiles and specifications can be seen at the office in Nashville. The bridge over Caney Fork will be 125 ft. high; its abutments are partly finished, and about four miles of the road are partly graded.

New Bonds.—New issues of bonds are noted as follows:

The *New York & New England* received at the Treasurer's office in Boston on July 15 bids for $500,000 of its general first-mortgage 6 per cent. bonds. The authorized amount of these bonds is $10,000,000, add about $7,000,000 have been issued heretofore.

American Dock & Improvement bonds, guaranteed by the *Central, of New Jersey*, having 40 years to run at 5 per cent. interest are offered at 102½ by Drexel, Morgan & Co., of New York. The authorized issue is $5,000,000, of which $4,000,000 will replace a former issue of 7 per cent. bonds. The company owns the water front and terminal property used by the Central in Jersey City.

Reading & Chesapeake first-mortgage 6 per cent. bonds, having 40 years to run, are offered by Musgrave & Co., of New York. The road (which is not yet built) is to run from Reading, Pa., to Havre de Grace, Md., 61 miles, with a branch 19 miles long to New Holland, Pa. The amount now offered for sale is $1,000,000 out of $2,500,000, the authorized issue.

New Haven & Northampton.—The Springfield *Republican* of July 10 says: "It is now understood that the long-promised opening of the New Haven & Northampton Company's line from North Adams to New York will take place on Wednesday, though the local offices have not as yet received the time tables. The road has been in readiness for some weeks, but there has been a difficulty between the Fitchburg and Canal people, both apparently wanting to run through the tunnel at the same time. Then, to make such a through line a success, the running time must be so carefully adjusted as to reach the trains at either end, which cannot be done without considerable arrangement with the various railroad magnates. One thing is definitely settled, and that is that new trains must make remarkably quick time from North Adams to New York to get any traffic from North Adams and the West. The Boston & Albany folks put on a train at North Adams two weeks ago, which makes the trip from that point to New York city in 5 hours and 35 minutes, taking six hours for the return trip. The route is from North Adams by the Pittsfield & North Adams Branch, thence on the main line to Chatham, then taking the Chatham & Hudson Branch to Hudson, and from this point to New York city on the New York Central road. To beat this time the Canal folks must run their trains at the rate of about 40 miles an hour, including stops; and as there are some 10 stops, counting the "know-nothings" (stops at draw-bridges', which must be made, it will be seen that there is lively riding in prospect. The road is said to be in good trim for fast running, with first-class rolling stock. It is said that most of the trains on the through line will be express trains. Just what is to become of the road to Williamsburg is hardly clear. It is said, however, that one train is to run through to Williamsburg, and that short trains will be run often on what will hereafter be known as the branch. As Williamsburg, Haydenville, Leeds and Florence, all busy manufacturing places, are located on this line, they will be given good accommodations, though those who helped to pay for the location of the line out that way hardly relish the idea of becoming the fag end of the road."

The branch from South Deerfield to Turner's Falls, 10 miles, now has all the track laid upon it. The ballasting will soon be completed with the force taken from the main line, and the road will be opened for business in a few weeks.

New Orleans Pacific.—Track on the Shreveport end of the line is now laid to Gloster, La., 26 miles from Shreveport and 24 miles from the junction with the Texas & Pacific. It is expected that the rails will reach Mansfield by Aug 1.

New River.—This company has passed under the control of the Norfolk & Western, the terms of transfer not being made public. The company has done some work on a line along the New River in Virginia and West Virginia, but has laid no rails. The new owner intends at once to complete the road into the Great Flat Top coal region, for the purpose of bringing coal to its own line.

New York, Housatonic & Northern.—The New York Supreme Court has denied the motion to set aside the foreclosure sale of this road.

New York, Lake Erie & Western.—A dispatch from London, July 12, says: "At a meeting of Erie preference shareholders yesterday, it was resolved to form a committee for the purpose of securing the payment of a 6 per cent. dividend for the last financial year."

New York, Pennsylvania & Ohio.—General Superintendent Cooper, July 1, issued the following general order concerning Sunday work: "After this date there will be no special excursion trains run over this railroad or its branches on Sundays. Only such regular passenger trains as are required to comply with the demands of the public for mail service and traffic from connecting lines will be permitted to run on Sundays. No freight trains will be run on Sundays, except such as may have been started from the terminal stations before Sunday morning, except such as are required to provide for the forwarding of live stock and other perishable property, for the detention of which the company might be held legally liable."

Ohio & Mississippi.—Receiver King's report to the Court for June is as follows:

Balance, June 1		$81,049.76
Receipts from all sources		470,359.73
Total		$551,409.49
Vouchers subsequent to Nov. 17, 1876	$236,131.90	
Pay-rolls and arrearages	132,892.29	
		369,024.19
Balance July 1		$182,385.30

The receipts were greater by $101,335.54 than the disbursements for the month.

Old Orchard Junction.—This road is now completed and opened for business. It is a branch of the Eastern Railroad about three miles long, from Old Orchard Junction to Old Orchard Beach. The Boston & Maine also has a short branch covering nearly the same ground.

Ontonagon & Brule River.—A bill in equity has been filed in the United States Circuit Court in Marquette, Mich., by the Lake Superior Ship Canal, Railway & Iron Company to quiet its title to certain lands. The object of the proceeding is really to set aside the claim of the Ontonagon & Brule River Company to certain lands granted it by the act recently passed by the Michigan Legislature, on the ground that the lands are not subject to grant, being already the property of the Lake Superior Ship Canal Company.

Oregon & Transcontinental Co.—The following is the full text of the circular dated June 25, and issued by Mr. H. Villard to subscribers to the purchasing syndicate or the holders of its certificates:

"Referring to my former communications, and to the report of Messrs. Endicott, Pullman and Woerishoffer, I beg to inform you—

"1. That a corporation has been organized under the laws of the state of Oregon, and with the name and title of the Oregon & Transcontinental Company, with a capital of $50,000,000, in 500,000 shares of $100 each, of which, however, only $30,000,000, or 300,000 shares of $100 each, will be for the present issued.

"The objects of this new company have been fully explained at the conference just held at my office, where any further desired explanations will be gladly given by me.

"2. That by virtue of the authority given under the terms of subscription to the purchasing syndicate, a contract has been entered into with said company for the acquisition of the securities belonging to the purchasing syndicate. In pursuance of this contract, the holder of each purchasing syndicate receipt for $10,000, or his transferee, is entitled to 122½ full-paid shares of the capital stock of said company. Two and one-half shares represent five months' interest on the face of the receipt.

"3. That in order to provide the means of liquidating the deficiency arising from the difference between the cost of the securities purchased for the purchasing syndicate and the $8,000,000 actually paid in, the holder of each purchasing syndicate receipt for $10,000, or his transferee, has the prior right and is invited to subscribe $12,500, upon payment whereof in the manner herein provided he will be entitled to receive 150 shares of like stock; this representing the proportionate amount of such deficiency. The right to subscribe expires July 6.

"Both as an original subscriber to the purchasing syndicate, and as a subscriber for the additional amount last named, you are entitled to a proportionate interest in the profits to arise from the acquisition of the stocks and bonds of various railroad corporations subsidiary to the Northern Pacific Railroad Company, to the Oregon Railway & Navi-

gation Company, and to the Oregon & California Railroad Company, in Minnesota, Dakota, Montana, Washington Territory, Oregon and California. You will be informed hereafter, by circular, of the precise nature and extent of these profits.

"A cash payment of only 15 per cent. of the said amount will be required on July 6. The remaining 85 per cent. will be called as follows: 10 per cent. Aug. 1, 10 per cent. Sept. 1, 10 per cent. Oct. 1, 15 per cent. Dec. 1, 20 per cent. Feb. 1 and 20 per cent. April 1.

"Temporary certificates, signed by myself and countersigned by the Farmers' Loan and Trust Company, representing the shares and rights to which you are entitled under the foregoing, will be delivered on and after July 1 upon surrender of the purchasing syndicate receipts now held by you.

"Regular stock certificates will be delivered as soon as they can be furnished by the American Bank Note Company.

"Separate receipts in the usual form will be given for the first two installments as paid; full-paid stock certificates for all subsequent installments as paid, and full-paid stock certificates for the first two instalments on final payment."

Owensboro & Nashville.—This road passed into the possession of the Louisville & Nashville Company at the time it secured the control of the Nashville, Chattanooga & St. Louis. The last-named company had bought the road with a view of extending it to Nashville, and making it a competing line from Nashville to the Ohio River. With the change of owners that intention was abandoned, and the Louisville & Nashville has now given up the road, which, from July 1, is operated by the company owning it. It is 36 miles long, from Owensboro, Ky., to Owensboro Junction on the Paducah & Elizabethtown road. The first time-table under the new management shows two trains a day each way, one making the run in 2½, the other in 3 hours. The stations and distances are as follows: Owensboro; Owensboro Depot, 1 mile; Panther Creek, 6; Sutherland, 8; Grow Hickman, 10; Lewis, 13; Livia, 16; Livermore, 22; Island, 25; Stroud, 28; South Carrollton, 33; Owensboro Junction, 36 miles.

Peoria, Decatur & Evansville.—We are informed by this company that the mileage given in our table of earnings for May was not correct. The true mileage as reported by the company, and the resulting earnings per mile are as follows:

	Mileage.		Earnings per mile.	
	1881.	1880.	1881.	1880.
May	248	190	$208	$185
Five months ending May 31.	222	162	1,017	823

Thus corrected the earnings per mile show an increase—12.4 per cent. for the month and 23.6 per cent. for the year—instead of a decrease as reported.

Richmond, York River & Chesapeake.—This company has leased to the Richmond & Danville Railroad Company the entire road and property, including the controlling ownership of the boat line used in the connections between this city and Baltimore. The lease is perpetual, and under the terms of the agreement the property is turned over to the Richmond & Danville Railroad Company free of all liabilities whatsoever, except its mortgage indebtedness of $900,000. Of this mortgage $100,000 is unexpended, and is turned over to the Richmond & Danville Company for the purpose of perfecting the line in such better equipment as may be found necessary to put it in such condition as will meet the requirement of the traffic expected to pass over it. In addition, the lessee undertakes to pay 3 per cent. semi-annually upon the capital stock of the leased railroad, of between $400,000 and $500,000, of which the Richmond & Danville Company has for some years past owned a considerable amount.

The road extends from Richmond, Va., to White House, 38 miles.

Rochester, New York & Pennsylvania.—In Albany, N. Y., July 11, articles of consolidation of the Rochester, Nunda & Pittsburgh Railroad Company with the Rochester, New York & Pennsylvania Railroad Company were filed in the office of the Secretary of State. The capital of the first-named company was $400,000, and the latter $1,100,000. The capital of the new company is $1,500,000. The company owns about 20 miles of track, which has never been used.

Sabine Pass & Texas Northern.—This company has been organized to build a railroad from Sabine Pass, Tex., northward to Marshall on the Texas & Pacific. The capital stock is to be $3,000,000.

St. Louis, Ft. Scott & Wichita.—The track on this road reached Iola, Kan., 48 miles from the starting point at Ft. Scott, on June 30. The line has been located beyond Iola to Yates Centre, and grading begun.

Sussex.—A dispatch from Newton, N. J., says that arrangements have been completed for the lease of this road to the Delaware, Lackawanna & Western Company. The terms of the lease are not stated. The road extends from Waterloo, N. J., on the lessee's Morris & Essex Division, to Franklin Furnace, 24 miles, and from Hamburg Junction to McAfee Valley, 3½ miles, with the right to use 2½ miles of the Midland track, from Franklin Furnace to Hamburg Junction. There is also a branch 6½ miles long, to Branchville. The road is chiefly owned by Mr. John I. Blair.

Texas & Louisiana.—This company has filed articles of incorporation for a railroad from Sherman, Tex., east by south to Mt. Pleasant in Titus County, a distance of about 115 miles.

Utah & Northern.—The track of this road is now laid to Melrose, Montana, 30 miles north of the late terminus at Dillon, and 378 miles from the southern terminus at Ogden, Utah. Trains are now running regularly to the new terminus. Work is progressing from Melrose northward.

Wabash, St. Louis & Pacific.—The new Detroit line, the Detroit, Butler & St. Louis road, was formally opened by an excursion last week. It is 112 miles long from Butler, Ind., the terminus of the Eel River line, to Detroit. Regular trains will be put on to Detroit soon.

It is reported that the difficulties over the Peoria, Pekin & Jacksonville road have been settled, and that the road will soon be transferred to this company. It is 83 miles long, from Peoria to Jacksonville. No terms of settlement are given.

About August 1 this company will take possession of the Springfield & Northwestern road, from Springfield, Ill., to Havana, 47 miles.

It is also reported that the purchase of the Indianapolis, Peru & Chicago road has been finally agreed on, and that the transfer to this road will be made about the end of this month. The terms of the sale have not been made public. The road runs from Indianapolis to Michigan City, 161 miles.

The acquisition of these lines will add 403 miles to the road worked by the company. It is possible, however, that there will be further litigation over the Peoria, Pekin & Jacksonville.

ANNUAL REPORTS.

The following is an index to the reports of companies which have been reviewed in previous numbers of this volume of the *Railroad Gazette*:

Cincinnati, Richmond & Fort Wayne.

This company owns a line from Ft. Wayne, Ind., to Richmond, 91 miles. The road is leased and worked by the Grand Rapids & Indiana Company, but a separate report is made for the year ending Dec. 31, 1880.

The general account is as follows:

Stock ($18,776 per mile)		$1,708,621
Bonds ($19,780 per mile)		1,800.000
Due lessee		654,970
Unsettled stock subscriptions, etc		171,172
Total		$4,334,763
Road and property ($40,469 per mile)	$3,682,707	
Income account	657,811	
Cash	245	
		4,334,763

The bonds bear 7 per cent. interest, and are guaranteed jointly by the lessee, the Pennsylvania Company and the Cincinnati, Hamilton & Dayton.

The earnings for the year were as follows:

	1881.	1880.	Increase.	P. c.
Gross earnings	$372,768	$322,067	$50,701	15.7
Expenses	284,273	239,534	44,739	18.6
Net earnings	$88,495	$82,533	$5,962	7.2
Gross earn. per mile	4,096	3,539	557	15.7
Net " "	972	907	65	7.2
Per cent. of expenses	76.21	74.37	1.84	....

Expenses include taxes and betterments. The gross earnings are the largest ever reported for this road. Expenses increased largely also.

The lessee's return shows as follows:

Net earnings, as above	$88,495
Interest, etc., paid	166,526
Deficit for the year	$72,031
Deficit to end of 1879	579,780
Total, Dec. 31, 1880	$651,811

The road has been gradually improved and is in better condition than ever before. More equipment is needed to handle the business to advantage.

Norfolk & Western.

This company, successor by purchase at foreclosure sale to the Atlantic, Mississippi & Ohio, presents the following statement in advance of the publication of the full report for the year ending June 30, 1881.

The road worked is the 408 miles from Norfolk, Va., to Bristol, with the City Point Branch, 10 miles, and the Salt Works Branch, 10 miles, 428 miles in all.

The earnings for the year were as follows:

	1880-81.	1879-80.	Increase.	P. c.
Gross earnings	$2,149,490.94	$1,936,641.68	$212,849.26	11.0
Expenses	1,150,577.02	993,228.27	157,348.75	15.8
Net earnings	$998,913.92	$943,413.41	$55,500.51	5.9
Gross earns. per mile	5,022.18	4,524.87	497.31	11.0
Net earns. per mile	2,333.91	2,204.24	129.67	5.9
Per cent. of exps.	53.52	51.30	2.22	....

The expenses for 1880-81 include $193,697.62 for renewals and extraordinary expenses. The statement says:

"An improvement and construction fund of $1,000,000 was provided under the reorganization, from which all further disbursements for renewals and extraordinary expenses will be made. As this will entirely complete the relaying of the road with steel rails, and will fully equip it, no further charges to renewals and extraordinary expenses will be proper.

"The Norfolk & Western Railroad Company has just secured the franchises and works of the New River Railroad, and will immediately prosecute the construction of the road into the Great Flat Top coal region. This will furnish cheap coal for the company's own use and for its important local manufacturing industries, and will also provide a large business in coal transportation for shipment from Norfolk, where coal wharves are being located."

Mobile & Girard.

This company owns a line from Columbus, Ga., southwest to Troy, Ala., 84 miles. The road is controlled by the Central of Georgia, and that company owns nearly all the third-mortgage bonds, which were issued to it in payment for advances. The report is for the year ending May 31, 1881.

The equipment consists of six engines; 5 [passenger and 3 baggage, mail and express cars; 31 box, 18 coal, 38 flat and 3 caboose cars.

The general account is as follows:

Pike County stock		$5,080.00
Preferred stock		279,900.07
Common stock		987,164.80
Total stock ($15,145 per mile)		$1,272,144 87
Bonds ($13,488 per mile)		1,133,000.00
Central R. R., of Georgia		3,071.18
Total		$2,408,216.05
Construction ($23,857 per mile)	$2,004,009 36	
Bills and accounts	45,931 38	
Reserved fund	32,485.18	
Cash	2,031.38	
Profit and loss	323,758.75	
		2,408,216.05

The bonded debt consists of $300,000 second-mortgage 8 per cent. bonds, $800,000 third-mortgage 4 per cent. bonds, and $33,000 third-mortgage 6 per cent. bonds.

The earnings for the year were as follows:

	1880-81.	1879-80.	Increase.	P. c.
Freight	$218,822.86	$181,102.26	$37,720.60	20.8
Passage	53,105.54	43,606.46	9,499.08	21.8
Mails	3,918.11	3,331.11	587.00	17.8
Total	$275,846.51	$228,039.83	$47,806.68	21.0
Expenses	189,172.96	149,335.71	39,837.25	26.7
Net earnings	$86,673.55	$78,704.12	$7,969.43	10.1
Gross earn. per mile	3,283.89	2,714.76	569.13	21.0
Net " "	1,031.83	936.95	94.88	10.1
Per cent. of exps	68.58	65.50	3.08	....

The increase in earnings was due to general improvement of business and gain in the country served. Expenses were increased by greater attention paid to the road; also by the unusually severe winter and by damage from spring freshets.

The income account was as follows:

Cash, May 31, 1881	$1,742.34
Gross earnings for the year	275,846 51
Sundry accounts	16,130.44
Total	$293,719.29
Transportation and repairs	$189,172.96
Interest	58,323.75
Central R. R. Co. of Ga	5,000.00
Post Office Department	171.02
Bond and stock paid	7,450.00
Reserved fund	31,570.18
	291,687.91
Cash, May 31, 1881	$2,031.38

The last outstanding plain bond of $500 was paid off during the year; also $6,950 Pike County stock. The sum of $32,900 is now invested as a sinking fund, and brings in about 6½ per cent. a year, which is added to the funds.

Locomotives ran 174,150 miles during the year at a cost of 3.59 cents per mile for fuel.

There were 44,176 passengers carried. The freight included 65,403 bales of cotton, of which 43,880 bales were carried to Columbus, 4,087 bales to Union Springs and 17,436 bales through.

There were used in renewals 625 tons of new rails and 31,063 new ties. Several new culverts were built and trestles filled up. Unusual repairs were made to the roadbed. A new freight engine was bought and another ordered; 10 coal and 4 flat cars were built in the shops.

Only one serious accident happened during the year, the derailment of a freight train on a bridge.

Portland & Rochester.

This company owns a line from Portland, Me., to Rochester, N. H., 52.5 miles. It is operated by a receiver, who is also President of the company, and his report is for the year ending Sept. 30.

The debt of the company is as follows:

First-mortgage to city of Portland		$700,000
Interest due and unpaid		283,500
Total city bonds		$983,500
First-mortgage 7 per cent. bonds	$350,000	
Interest due and unpaid	110,250	
		460,250
Second issue exchanged for Portland bonds	$450,000	
Interest due and unpaid	182,250	632,250
Total ($39,543 per mile)		$2,076,000

Interest on the Portland bonds has been paid to holders by the city, the amount paid being a debt of the company to the city.

Proceedings to foreclose the $350,000 mortgage are in progress in Maine and New Hampshire.

The earnings for the year were as follows:

	1879-80.	1878-79.	Inc. or Dec.	P. c.
Passage	$50,508.80	$51,568,41	D. $1.059.61	2.1
Freight	102.588.39	84,372.15	I. 18,216 24	21.7
Mail, etc	9,536.36	9,761.38	D. 225.02	2.3
Total	$162.633.55	$145,701.94	I. $16,931.61	11.0
Expenses	137,905.36	126,450.20	I. 11,455.16	9.1
Net earnings	$24,728.19	$19,251.74	I. $5,476.45	2.8
Gross earns. per mile	3,096.45	2,788.60	I. 307.85	11.0
Net earns. per mile	471.01	366.70	I. 104.31	2.8
Per cent. of exps	84.81	86.25	D. 1.44	...

Expenses were largely increased by the bad condition of the road as left by the company. The road is now in comparatively very good order, and pains are taken to keep it up to the standard.

The traffic of the year was as follows:

Train miles:	1879-80.	1878-79.	Inc. or Dec.	P. c.
Passengers	90,059	85,595	I. 4,464	5 2
Freight	86,067	85,473	I. 594	0.7
Service	7,351	... .	.....	....
Total	183,477	.....	....	....
Passengers, through	21,847	.....	. .....	....
Passengers, local	93,962	....	.....	....
Total	115,836	109,004	I. 6,832	6.3
Tons freight, through	52,865	.....	.....	....
Tons freight, local	52,952	.....	....	....
Total	105,817	106,829	D. 1,012	0.9

About 12,000 tons of ice were cut on the line of the road and carried to Portland. To accommodate this and the coal business, a wharf was built on property leased by the road.

During the year 63 tons of new rails and 26,000 ties were laid; several new bridges and culverts built and other repairs made. A new engine was bought to replace one broken up and five flat cars were bought.

The half interest of the Maine Central in the Portland round-house was bought and a new track made to the round-house on land bought from the city. A new track-scale was also bought. The old car-house was converted into a machine shop. A two-story addition to Portland station was built and is used for general offices.

The passenger and freight stations in Portland has been moved back to the old depot, the use of the Grank Trunk stations having been found less convenient for patrons of the road than the old station.